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USSR

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Review of Agriculture in 1981 and Outlook for 1982



ABSTRACT

During 1981, the Soviets suffered their third consecutive poor harvest, an event unprecedented since World War II. Grain production statistics were suppressed at the national level and in the major grain-growing republics. Overall agricultural production was valued at 120 billion rubles, about the same as 1976. After three bad years, improved performance in 1982 is expected.

Keywords: Soviet Union, U.S. partial embargo, Food Program, agricultural production, crops, livestock.

FOREWORD

This report reviews and analyzes major developments in Soviet agriculture during 1981 and provides information on the 1982 outlook. During 1981, the most important influence on U.S.-Soviet trade was the termination of the U.S. partial embargo on April 24, 1981. The Soviets remained cautious—to the extent their own poor agricultural performance permitted—but returned to the U.S. market for grains and oilseeds. Soviet-sponsored repression in Poland led to new sanctions as the year ended. While these only indirectly affected agricultural commodities, the possibility of a total trade embargo added uncertainty that may have slowed the return of trade to pre-embargo levels. To place that possibility in its proper context, the President stated that a complete embargo would be used only in extreme situations threatening U.S. national security, and if cooperation with other nations could be obtained.

In the USSR, General Secretary Brezhnev characterized food as, “on the economic and political level, the central problem of the whole 5-year plan.” Yet, the Soviets do not appear willing to increase that proportion of capital investment directed to agriculture at the expense of military and industrial development. Rather, the Soviets hope to solve their food problems by increasing returns on existing investment, increasing productivity, and otherwise improving agricultural efficiency. Whether or not they do so, they are likely to remain among the world's four largest markets for agricultural commodities.

Angel O. Byrne coordinated and directed the preparation of this report. Sections were written by Angel O. Byrne, Thomas Bickerton, James Cole, Yuri Markish, and Anton F. Malish. Carolyn Miller prepared the statistical data. The U.S. Agricultural Counselor in Moscow provided considerable information. Contacts in other U.S. agencies, universities, among agricultural traders and producers, and in foreign governments frequently provided additional assistance. Statistical data used in this report are largely compiled from official Soviet sources.

The International Economics Division's program of agricultural situation and outlook analysis and reporting includes the following regularly scheduled publications: *The World Agriculture Outlook and Situation* published three times annually; regional reports on Asia, Africa, China, Eastern Europe, the Middle East, the Soviet Union, Western Europe and the Western Hemisphere; the *Foreign Agricultural Trade of the United States* published bi-monthly; the *Food Aid Needs and Availabilities Report* published semi-annually; and the *Outlook for U.S. Agricultural Exports* published quarterly. Information on obtaining these publications is enclosed in this report.

We welcome any comments, suggestions, or questions concerning either this report or the current agricultural situation in the USSR. Responses should be directed to the East Europe-USSR Branch, International Economics Division, Economic Research Service, USDA, Room 314, 500 12th Street, S.W., Washington, D.C. 20250. Our telephone number is 202-447-8380.

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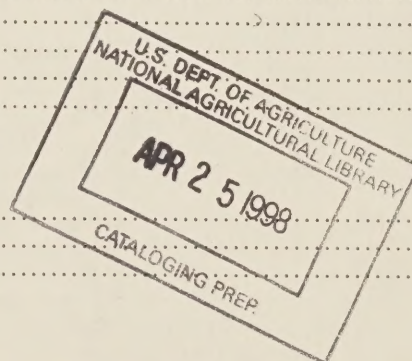
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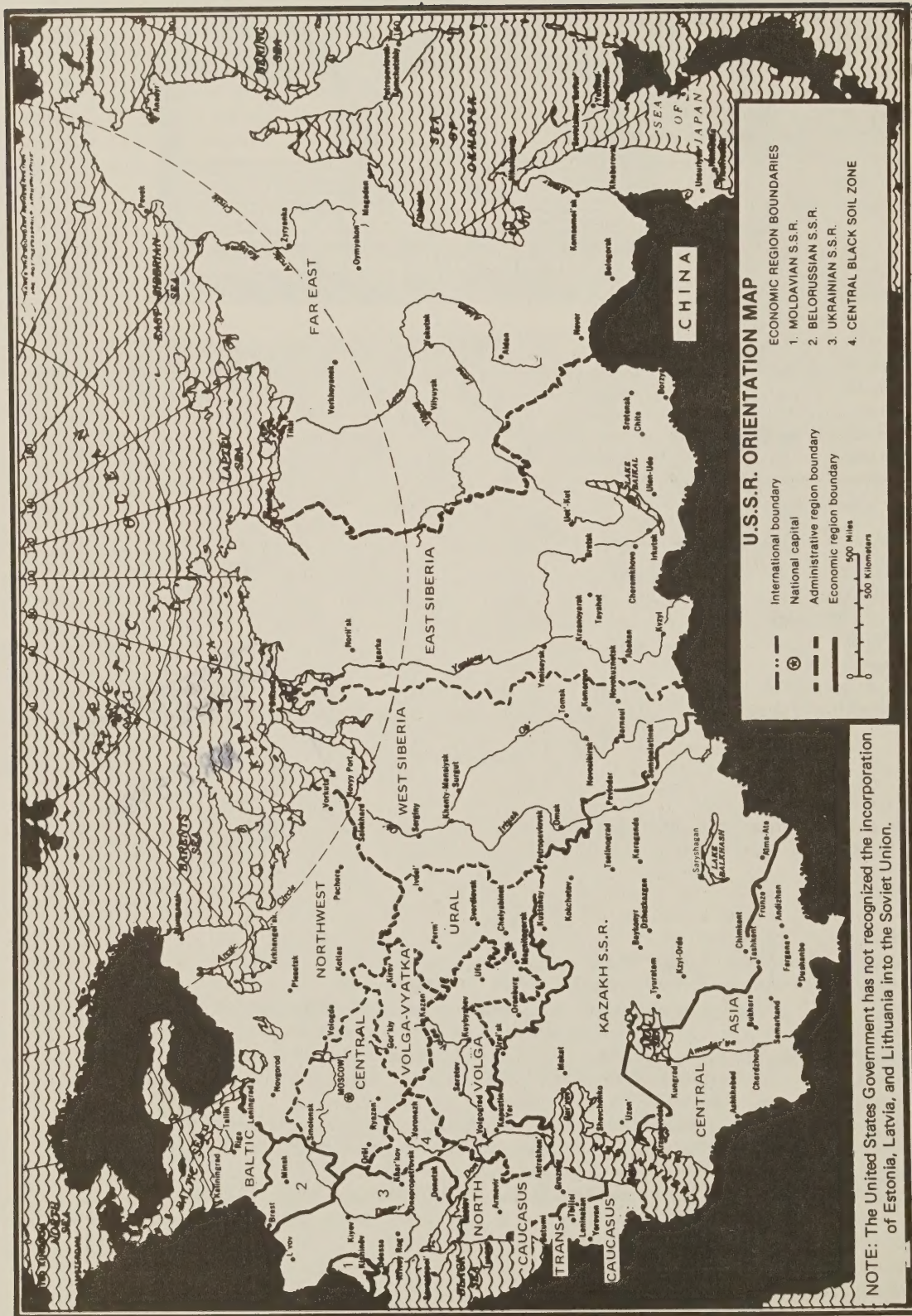
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USSR

REVIEW OF AGRICULTURE IN 1981 AND OUTLOOK FOR 1982

SUMMARY

U.S.-USSR trade began to recover following April 24, 1981, when the U.S. partial embargo of agricultural products was lifted. In 1981, the value of U.S. agricultural exports to the USSR reached \$1.7 billion, up by about \$600 million from a year earlier.

In December 1981, the United States announced new economic sanctions in response to the imposition of martial law in Poland and the USSR's responsibility for repression in that country. These new sanctions only indirectly involved agricultural products, but they underscored the vulnerability of U.S.-USSR trade. One sanction was the decision to postpone negotiations on a new long-term grain agreement to replace the one scheduled to expire on September 30, 1982. While postponement does not affect current U.S.-USSR arrangements, the implicit treaty commitments included in the agreement are considered an important element in stabilizing U.S.-USSR agricultural trade. Whether or not a new agreement is negotiated, the Soviets are expected to remain major grain importers and large purchasers of U.S. grain.

Soviet gross agricultural production in 1981, valued at 120 billion rubles, fell 2 percent below 1980 and was short of plan by 16 billion rubles. Output was 6 percent below the 1978 peak and the lowest since 1976. Despite 3 years of decreasing production, the USSR remains among the largest producers of agricultural commodities in the world.

The poor crop performance in 1981 was mainly attributable to severe summer weather and sukhoveys (hot, dry winds) over large areas. Damage to the grain crop was severe enough that Soviet planners omitted the outcome of the crop from the annual plan fulfillment report. Such an omission confirmed the crop as an extremely poor one, well below 1980's output of 189 million tons and far short of the 236 million tons planned.

Nongrain crops also suffered in 1981. Sugar beet output fared poorest of all, falling precipitously to 60.6 million tons—the worst crop since 1963. Potato production, at 72 million tons, rose 7 percent above the 1980 crop but nonetheless was the second poorest in 18 years. Output was below plan by 17 percent. Fresh vegetable output, at 25.6 million tons, was 1 percent below 1980's reduced output and 9 percent below plan.

Sunflowerseed production dropped about 2 percent below 1980's depressed output and totaled 4.6 million tons. Output was the poorest since 1963 and fell 28 percent below plan. Soybean production, estimated at

450,000 tons, was perhaps 17 percent below 1980 output. Vegetable oil production, at 2.6 million tons, reportedly fell 2 percent. Cotton output reached 9.6 million tons (seed cotton)—down close to 4 percent from the 1980 record, but still 300,000 tons above plan. Cottonseed declined.

With some improvement in forage crop production, much-increased grain imports, and possibly more efficient use of feed, the Soviets maintained livestock inventories at high levels. Cattle and very probably poultry flocks reached record numbers on January 1, 1982. Sheep and goat inventories gained, while hog numbers dropped. Cattle, including cows, totaled 115.7 million head on January 1, 1982, and poultry inventories probably were a record of somewhat over a billion. Sheep and goat numbers gained by 500,000 head to total 148 million. Hog numbers, at 73.2 million, dropped by 200,000 head to the lowest since January 1, 1979.

Meat production in 1981 totaled 15.2 million tons (slaughter weight), about 1 percent above 1980 but 5 percent below plan. Milk production, at 88.5 million tons, fell 3 percent from a year earlier and was short of plan by close to 7 percent. Egg production continued on the uptrend and reached a record of 71 billion eggs.

As in 1980, agriculture again received 27 percent of total capital investment in the national economy. Newly irrigated land brought into production totaled 660,000 hectares and newly drained land totaled 700,000 hectares—both below targets. Tractor deliveries rose, trucks stayed the same, but grain combine deliveries lagged behind a year earlier. Fertilizer production (nutrient-weight basis) rose 5 percent, while deliveries rose by 2 percent.

As a result of these individual commodity developments, food supplies in 1981 were probably tighter than in 1980. Numerous reports cited long lines at meat and dairy outlets, poor quality of food, short supplies of milk and butter, and higher costs of fruits and vegetables. A variety of rationing systems seemed to be in place in numerous Soviet cities.

The institutional shortcomings of Soviet agriculture were magnified by poor weather. With more favorable weather conditions, agricultural production should improve in 1982. Even so, Soviet agricultural targets through 1985 will probably be revised downward after a full evaluation of 1981's shortfalls. (Angel O. Byrne)

DROUGHT REDUCES 1981 GRAIN PRODUCTION

Although the Soviets have not announced grain production, analysis indicates that they suffered not only their third consecutive poor harvest but the worst since 1975. USDA's estimate of the 1981 Soviet grain crop is 175 million tons, a number arrived at in early October when the harvest was virtually completed. The estimated

1981 production of grains and pulses compares with Soviet announced production of 189 million tons in 1980, 179 million tons in 1979, and a planned 1981 output of 236 million tons (table 1). It would mean that the 1981 crop was no better than the average achieved in the first half of the 1970's.

Grain Outturn Disappointing

The March issue of the statistical journal *Vestnik Statistiki* reported final grain area at 125.6 million hectares, up about 3 million from earlier USDA estimates. Despite poor weather, abandonment was less than usual. The Soviets apparently made an effort to harvest every grain field. Decreased areas for winter wheat and rye were offset by greater plantings of oats, corn, and pulses.

Poor weather conditions affected the 1981 crop from the beginning of the fall planting season. The delayed 1980 harvest complicated planting of winter grains. Fall work was rushed, field preparation poor, and seed quality lower than normal. Only about 34 of the 37 million hectares planned were planted. Precipitation was heavy in parts of the Ukraine, the North Caucasus, and in the northern portions of the European USSR. Grains entered dormancy at an earlier-than-optimal stage and with an abnormally shallow root structure that left them unusually vulnerable to winter weather. Fortunately, the weather was unusually mild. December 1980 and January and February 1981 average monthly temperatures in the European part of the country (apart from the western regions) were 4-8 degrees centigrade above normal, an event happening once every 10-30 years. Siberia experienced as mild a winter as occurs only once every 80-100 years.¹ Soviet preliminary area data confirmed that winterkill, along with grazing over and spring green chop, amounted to about 14 percent of the area, compared to long-term averages of about 17 percent.

Crops greened up, and a good outturn was expected. However, March weather was wet and cool, and spring field work was delayed. Sowing of spring grains and pulses fell behind even the slow pace of 1980, and well behind longer term averages. Then, a prolonged drought began. High temperatures and little or no precipitation plagued the Eastern Ukraine, North Caucasus, and the Middle and Lower Volga.

These adverse conditions prevailed when both spring wheat and spring barley were flowering, leaving these grains highly susceptible to yield reduction. The stricken area encompassed all of the Volga Valley, the Central Black Soil Zone, and the Central region around Moscow. By early August, high temperatures, low relative humidity, low precipitation, and high winds had taken their toll. The only portions of the European USSR unaffected were the Baltics, Belorussia, and Western Ukraine. The western portion of the New Lands fared better, but prolonged periods with little or no rainfall dried out soils in the eastern portion, particularly around Omsk and Pavlodar.

By July, it was clear that the 1981 crop would be a disappointment. Numerous press reports indicated the "unusually warm summer" accelerated grain ripening by as much as 2 weeks in some areas.² Winter and spring crops were reported ripening simultaneously in some areas, increasing the harvesting burden on manpower and machinery. The pace of the harvest was especially fast, "50 percent higher than last year," according to Alexander Zhubolov, Chief of the Soviet Grain Administration.³ Such rapid harvests are usually associated with extensive drought damage. A *Pravda* editorial (July 22, 1981) reported that "...because of the heat and, in some

Grain production by Republic, 1977-81

Republic	1977	1978	1979	1980	1981 ¹
1,000 metric tons					
USSR	195,727	237,390	179,176	189,090	NA
RSFSR	108,717	136,526	91,803	105,122	NA
Ukraine	48,516	50,607	33,965	38,100	NA
Belorussia	6,618	7,288	4,585	5,009	5,700
Uzbekistan	1,722	2,525	2,720	2,518	NA
Kazakhstan	17,727	27,891	34,534	27,506	NA
Georgia	716	672	649	636	NA
Azerbaidzhan	1,074	1,169	1,182	1,136	NA
Lithuania	2,881	2,798	2,225	1,932	NA
Moldavia	3,072	3,523	2,798	2,815	2,285
Latvia	1,547	1,120	1,171	1,054	NA
Kirgizia	1,134	1,504	1,549	1,307	NA
Tadzhikistan	238	337	344	245	NA
Armenia	317	278	318	236	NA
Turkmenistan	205	264	281	276	NA
Estonia	1,243	888	1,052	1,198	NA

¹Preliminary.

places, the rain and cold, crops have turned out stunted, sparse, and lodged."

By August 31, 1981, grain had been cut on 96.9 million hectares, as compared to 78.3 million hectares on September 1, 1980. Three weeks later, the harvest was nearly finished, although an early snowstorm in Siberia caught 2 to 3 million hectares of grain still in the fields. (The higher area figure suggests that this grain may have been recovered.) The fast pace and quick recovery of grain in windrows suggested the crop was probably of good quality.

The full effect of the summer drought was difficult to judge during the crop season, but a January 1982 broadcast by the First Secretary of the Ukrainian Communist Party Central Committee stated: "The drought last year exceeded in its duration and impact even such arid years as 1972, 1975, and 1979."⁴

Grain Utilization Cut Back

As of early March, USDA estimated total USSR grain utilization for the July 1981-June 1982 marketing year at 217 million metric tons, about 11 million tons less than in 1980/81 (table 2). The estimated 217-million-ton utilization would be the lowest since the disastrous harvest of 1975.

Food, industrial and seed usage of grain are the highest priority categories, and usage shows little variation in response to production changes. In 1981/82, food and industrial uses (for starch, beer, etc.) are thought to have amounted to about 51 million tons. Seed use is estimated to have been about 28 million tons.

The Soviet use of the "bunker weight" grain reporting concept requires an estimate for dockage-waste, i.e., an indication of the amount of excess moisture and foreign matter gathered during harvest. The warm, dry weather and the rapid harvest pace suggest that dockage-waste was perhaps near the long-term average of about 10 percent of production.

Grain-for-feed usually shows the greatest response to production shortfalls. In 1981/82, March estimates would put it at about 121 million tons, 3 percent off the peak achieved in 1978/79.

¹*Selskaya Zhizn*, March 3, 1981.

²*Izvestiya*, July 16, 1981.

³FBIS, *Daily Report: Soviet Union*, July 29, 1981.

⁴FBIS, *Daily Report: Soviet Union*, February 4, 1982.

Record grain imports have been required from July 1981 to June 1982. Imports are forecast to reach 43 million tons, including 19 million of wheat, 23 million of coarse grains, and 1 million of miscellaneous grains.

In late March, USDA became aware of unofficial Soviet sources suggesting a 1981 crop of 10-15 million tons below the USDA end-of-season estimate, which was still maintained in the absence of Soviet officially reported production. Since crop outturn is obviously the key factor in evaluating Soviet grain utilization, it is important to consider the effects of an even smaller crop, perhaps in the range of 160-165 million tons.

In terms of today's demand for grain in the Soviet Union, a grain crop of 160 million tons would represent nearly as severe a shortfall as the Soviets suffered in 1975. Such a small crop may have put unanticipated pressure on Soviet bread supplies. Since the winter wheat and winter rye areas were down 3.4 million hectares from the previous year, the Soviets may have experienced shortages of milling-quality grains. If so, it would explain the larger-than-expected imports of bread grains.

A smaller crop outturn is unlikely to result in much larger 1981/82 Soviet grain imports. These have already been moving at a record pace, and imports of about 43 million tons—an amount approaching current port handling capabilities—are already expected. A smaller crop, however, would probably portend another year (1982/83) of imports at near-record levels. It would also be a factor influencing strategies should the United States and the USSR engage in negotiations to renew the Long-Term Grain Agreement.

Grain-for-feed use would be expected to show a significant reaction to a crop as small as 160 to 165 million tons. If the crop reached only 160 million tons, only about 110 million tons could have been used for livestock feeding. This would represent a reduction of 12 percent from peak feeding in 1978/79, and an even larger drop in grainfed per animal unit. Since animal numbers have generally been maintained, such reductions would help explain the sharp drop in meat production in January and February 1982. Shortages of grain on this scale

Grain procurements by Republic, 1977-81

Republic	1977	1978	1979	1980	1981 ¹
1,000 metric tons					
USSR	68,027	95,900	62,834	69,372	NA
RSFSR	36,441	56,211	29,551	36,960	NA
Ukraine	18,475	17,758	7,624	11,368	13,500
Belorussia	1,403	1,616	1,138	1,029	1,800
Uzbekistan	810	1,015	1,138	984	1,030
Kazakhstan	8,215	16,784	20,673	16,402	15,734
Georgia	161	164	170	184	170
Azerbaidzhan	332	354	363	360	401
Lithuania	315	310	330	220	450
Moldavia	1,064	907	1,000	1,064	NA
Latvia	257	168	191	182	296
Kirgizia	239	296	304	301	400
Tadzhikistan	55	74	77	44	100
Armenia	76	58	71	54	NA
Turkmenistan	56	55	62	65	NA
Estonia	128	130	142	155	NA

¹ Preliminary.

would also encourage the feeding of bread to livestock, a phenomenon in the Soviet Union brought about by constant retail prices for bread despite periodic increases in procurement prices for grains. More on this subject is reported later.

Grain production of only 160 million tons, combined with the decrease in grain-for-feed and a lower estimate for dockage-waste, would result in total utilization of only 205 million tons, a decrease of 20 million tons from 1980/81. Thus, even with record imports the Soviets could not have met all their grain needs.

1982 Planting Intentions

Winter grains were sown in the fall of 1981 on 35.5 million hectares, about 500,000 below plan but still 1.5 million more than in the previous year. About 117.3 million hectares were plowed in the fall, almost 7.5 million than a year earlier. Spring sowing on clean fallow will increase. The total grain area for 1982 is expected to be about 126.5 million hectares. (James Cole)

OTHER FEEDS SHOW SMALL IMPROVEMENT

Throughout 1981, newspapers and journals in the Soviet Union ran articles urging increases in fodder production. An article in the Soviet press quoted General Secretary Brezhnev as saying that the shortage of feed is the most pressing problem facing livestock producers in the Soviet Union.⁵ Because of the increased emphasis, and/or because of the generally favorable weather lasting through the first cutting, forage production in 1981 was better than in the two previous years. According to the last harvest progress report available (October 19, 1981), hay production was probably about 10 million tons more when compared to 1980, 1979, and 1978.⁶ Straw production, at 81 million tons, was running slightly higher than the previous year and perhaps 10 million tons more than 1979. Silage and haylage production was running below 1980's pace but was about the same as in 1979. Silage totaled 177.5 million tons and haylage 55.2 million.

Selected feed output from all sources, by type, 1975-81

Year	Hay	Haylage	Straw	Silage	Feed roots
Million metric tons					
1975	46.5	47.0	79.8	144.3	33.2
1976	49.7	62.1	97.2	211.7	49.9
1977 ¹	45.0	65.8	176.3	197.8	45.3
1978 ²	52.8	71.0	86.4	163.6	45.7
1979 ²	52.6	54.4	68.3	163.2	38.4
1980 ²	54.3	67.7	78.5	170.5	41.6
1981 ³	64.1	55.1	79.0	162.7	NA

NA= Not available.

¹ As of September 26 for hay, haylage, straw, and silage. ² As of October 6 for hay, haylage, straw, and silage. ³ As of October 5 for hay, haylage, straw, and silage.

⁵ *Economicheskaya Gazeta*, No. 35, August 1981.

⁶ *Selskaya Zhizn*, October 24, 1981.

The quality of the forage crop probably exceeded that of 1980. The 1980 crop suffered primarily because of above-average summer and fall rains, which caused spoilage. Last year, the initial forage cutting was probably of high quality, but later ones probably suffered from the summer-long drought and high temperatures.

The Soviet Union continued to stress the importance of mixed feeds to improving the protein balance in livestock feeding. Reportedly, a better balance could save an estimated 20 million tons of grain. Inefficiencies in mixing feeds, as well as separate feeding of succulents, roughages, and concentrated feeds, reportedly waste 20-25 percent of feed.

State enterprises in the first 5 months of 1981 produced 0.4 percent more mixed feeds than in the same period in 1980. But, while the Soviets recorded a 19-percent increase in the deliveries of chemical feed additives (617,000 tons, nutrient-weight basis), they did not publish data on mixed feed production for 1981. It was another important omission from Soviet economic data and taken as further evidence of a serious feed deficit.

The tight grain and feed situation is probably responsible for an extensive campaign to use food waste as a "substantial reserve" for increasing production of livestock products. *Partiinaya Zhizn* (Party Life), on

November 24, 1981, reported on Donetsk district's efforts to increase production on private plots and the subsidiary farms of industrial enterprises. It noted that "about 48 percent of the animals' diet" on subsidiary farms was waste food. The article criticized housing officials for failing to collect food wastes more efficiently and concluded: "The creation of industrial enterprises' subsidiary farms, in our view, should be based on the idea of making fuller use of waste food without counting on obtaining concentrated feed from the State."

But food waste feeding is a risky venture. The nutrient content is unpredictable, and garbage must be carefully sorted. The major problem, however, is the danger of disease transmission. In the United States, garbage feeding is strictly regulated. A major factor in outbreaks of hog cholera in the United States prior to 1976 was feeding improperly treated garbage. Untreated feeding of food waste from airliners is believed to be responsible for the spread of African swine fever, and both swine vesicular disease and foot and mouth disease are transmitted through waste feeding. Thus, while widespread feeding of food waste in the USSR might save some grain, it is hardly considered an optimum solution. (James Cole, Anton F. Malish)

ESTIMATING THE USSR GRAIN CROP

USDA's official estimates of the Soviet grain crop appear in Foreign Agriculture Service circulars entitled "USSR Grain Production" and "World Crop Production," which are usually released about the 10th of each month. The estimates are approved by the World Agricultural Outlook Board, which has the responsibility to coordinate and review all crop and commodity material within the Department. Analyses supporting estimates are prepared by a USDA interagency task force on which the Foreign Agricultural Service, the Economic Research Service, the Agricultural Stabilization and Conservation Service, and the World Board are represented.

The task force considers a variety of information, including:

1. imagery and interpretive data obtained from the LANDSAT and METSAT meteorological satellites;
2. mathematical weather-yield models, relying primarily on temperature, precipitation, soil moisture, area, and yield-trend estimates;
3. reporting cables of the U.S. agricultural counselor assigned to the U.S. Embassy in Moscow; and
4. meteorological monitoring provided by the Environmental Technical Applications Center, U.S. Air Force Weather Service, and additional meteorological information and crop condition assessments made by the NOAA-USDA Joint Agricultural Weather Facility; and
5. crop information reported in Soviet national and republic newspapers, articles in various Soviet agricultural journals, press releases, and other sources.

The estimate itself flows from a consensus developed on the day the release is made.

The initial estimate of last year's crop was released on May 11, 1981, and was 210 million tons. The favorable forecast reflected the emergence of winter grains in satisfactory condition, and the generally normal or above-normal soil moisture conditions in April.

Then, however, sources recorded a period of hot, dry weather that, by early July, indicated reduced yield prospects. By then, it seemed that sown area would also fall short of expectations, because wet weather interfered with spring field work. USDA dropped its estimate to 200 million tons, primarily because of the adverse weather impact on spring sown grains then in a critical stage of development.

The estimate dropped to 185 million tons in August, supported primarily by Soviet press reports of widespread drought, sukhoveys, and yield losses. Attaches traveling in the New Lands, however, saw grain crops of average or near-average yields. In September, the estimate was dropped another 5 million tons, on the basis of continued drought, rapid harvest reports, and an estimated harvested area smaller than any since 1975. The last downward adjustment, to 175 million tons, occurred in October following the unusually rapid harvest pace.

After the crop growing season, USDA monitored a variety of Soviet print sources for information on the grain crop. Usual announcement opportunities passed without mention of the crop size. The plan fulfillment report also avoided mention of crop size, stating instead: "State grain resources fully ensure that the country's population is provided with bread and bread products." Such information confirmed that a very poor crop had been produced, but did not provide the quantitative information that permitted an accurate reassessment of earlier estimates. Secondary sources reported a wide range of possible outcomes suggesting that few people in the USSR were privy to the actual production figure.

LIVESTOCK SECTOR PERFORMANCE IMPROVES SLIGHTLY

Soviet livestock data published in 1981 displayed some gaps in coverage. The annual plan fulfillment report, for example, neglected to provide data on the breakdown of animal numbers in the socialized and private sectors. Given new policies aimed at increasing livestock output on private plots, its omission probably reflects the tight feed situation which would be assumed to show its greatest effects on privately owned livestock. Similarly, meat production, by type of meat, was not included. In recent years, increases in poultry have offset declines in beef and pork.

Livestock Inventories

Despite the poor 1981 grain crop and only a small improvement in overall forage production, the Soviets were able to maintain livestock numbers at high levels, according to their published sources. Stepped-up grain imports and possibly more efficiency in livestock feeding helped minimize any significant above-normal slaughter of livestock. January 1, 1982 inventories showed record cattle (including cows) and, most probably, poultry. Hog inventories fell by about 200,000 head, the second consecutive decline. Sheep and goat inventories rose by 500,000 head, but overall the rapid herd expansion that characterized the late 1970's seems to have halted (table 3).

Total cattle inventories (including cows), at 115.7 million, were up 643,000 head. Cow inventories totaled 43.6 million. Hogs totaled 73.2 million, the lowest number in 2 years. Total sheep and goats reached 148 million. Poultry inventories as of January 1 were not reported, but it is estimated that they reached a new record of somewhat over a billion.

Published data on monthly changes in livestock numbers in the socialized sector are shown in table 4. The changes in herd size, and in average slaughter weights and animals marketed, gave mixed indications of feeding stress during the year. September 1981 data, for example, showed especially light average weights of cattle and hogs for slaughter, and above-normal marketings. Presumably, unfinished animals (and perhaps breeding stock) were being slaughtered to more effectively utilize grain and fodder reserves during the winter months. Nevertheless, inventory patterns in the socialized sector showed no evidence of distress slaughtering such as occurred in 1975.

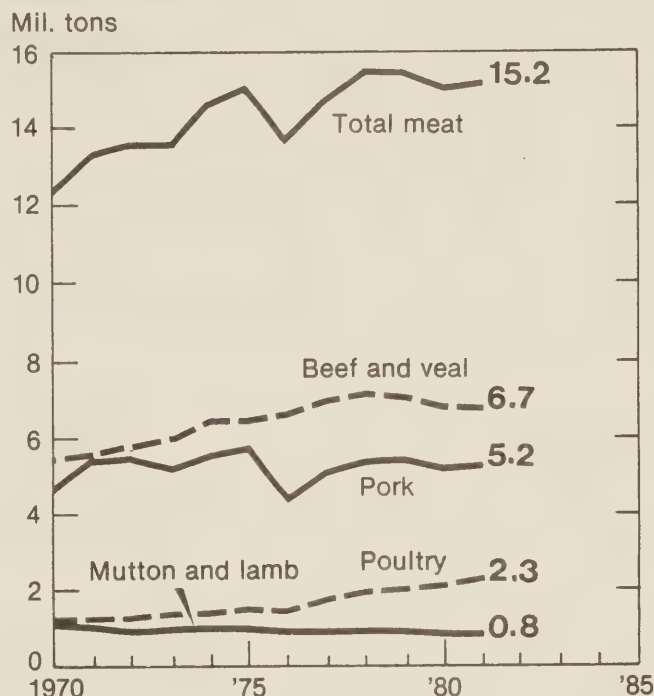
Although official confirmation is lacking, the decline in hog numbers in 1981 probably affected primarily the private sector. This sector is usually the first to react to feed shortages, and in 1981, grain, fodder, potatoes, and sugar beets were all in short supply.

Meat Production

USSR total meat production (slaughter weight) in 1981 reached 15.2 million tons, up 1 percent from the 15-million-ton output in 1980 but 5 percent short of plan. This is the fourth consecutive year that meat output fell short of the goal (table 5). The Soviets made record meat imports in 1981 and per capita consumption may have been maintained although meat shortages and eventually rationing were widespread.

Figure 1

Meat Production



Government purchases of meat (live weight) totaled 16.1 million tons, up 1 percent from a year earlier (table 6). The average weights of cattle and hogs sold to the Government for slaughter during January-November 1981 were 349 kilograms and 101 kilograms, respectively. Cattle average weights were the lowest for this period in 5 years. Hog average weights remained at the depressed 1980 level. Marketings of cattle and hogs in this same period each rose 3 percent above the corresponding period in 1980.

In 1981, Soviet imports of meat and meat products rose to 980,000 tons, surpassing by 19 percent the 821,000 tons imported in 1980 (table 7). Soviet red meat imports are thought to be mainly lower quality boneless beef used in sausage manufacturing.

Soviet exports of meat and meat products in 1980, at 35,100 tons, rose 5 percent above a year earlier. These exports have been about 35,000 tons since 1977 and probably remained at that level in 1981.

Per capita consumption of meat and fat in 1980 fell to 57 kilograms, down 1 kilogram from a year earlier, down 6 kilograms from plan, and well short of the Soviet consumption norm.

On December 15, 1981, the USSR Ministry of Meat and Dairy Industry signed an agreement on scientific and technical cooperation with Iowa Beef Processors, a recently acquired subsidiary of Occidental Petroleum. The agreement provides for the exchange of information on meat processing and for joint feasibility studies in that area and in related fields. The agreement could lead to additional sales of U.S. meat and other animal

products to the USSR, although the Soviets are probably most interested in access to U.S. processing and packaging technology.

Milk and Dairy Products

Milk production in 1981, totaling 88.5 million tons, dropped 3 percent below 1980's output of 90.9 million tons and 7 percent below plan. Milk production in the USSR has trended downward for 4 consecutive years, despite increases in cow inventories. Milk yields per cow fell steadily during 1978-80 and dropped again in 1981. Continuing poor grain and roughage availability has been a major factor in the decline in milk output. Government purchases of milk from the socialized and private sectors fell to 55.6 million tons in 1981, down almost 3 percent from the reduced level a year earlier, and down 9 percent from plan. Purchases in 1981 were the smallest since 1974.

Food industry output of whole milk products reached 25.7 million tons, reportedly up by about 1 percent from a year earlier. The food industry's butter output, on the other hand, dropped 5 percent to 1.2 million tons. More of the milk purchased by the Government from farms evidently went into producing whole milk and products than into butter production. Butter imports, which reached a record 249,000 tons in 1980, fell in 1981 to 215,000 tons.

Per capita consumption of milk and milk products (including the milk equivalent of butter) dropped to 314 kilograms in 1980—almost 2 percent below 1979 and the lowest level since 1976. Per capita consumption in 1981 likely fell again, by at least 4-5 kilograms.

SUGAR BEET CROP FAILS

Soviet sugar beet production plummeted to the lowest level in 18 years. In 1981, only 60.6 million tons of beets were produced, a drop of 24 percent from 1980's poor crop of 79.6 million tons (table 8). One immediate consequence is that the 1981-85 target for an average production of 100-103 million tons is now out of reach. In order to fulfill this goal, production over the next 4 years would have to average 10 million tons more than the best crop ever produced in the USSR.

As with grains, heavy rains in late April and early May disrupted sugar beet sowing. Sowing began earlier than usual, but soon fell behind 1980's very slow pace. When sowing was finally completed, the 3,633,000-hectare area was about 77,000 hectares smaller than in 1980. Given normal yields, an area of about 3.8 million hectares would have been needed to approach planned production levels. By starting sowing operations early, the Soviets risked exposing that portion of the crop to frosts that can induce premature flowering, which hurt yields.

Nematode infestation was reported in beet-seed growing areas of Kirgizia and also in several major beet-growing regions. In May and June, beet-leaf aphids appeared over a considerable area of the Ukraine⁷, and opaque carrion beetles damaged beets in at least three of six Belorussian districts.⁸

Eggs

Egg production reached a record 70.9 billion eggs, 4.6 percent above a year earlier and 2 percent above plan. Government purchases of 45.2 billion eggs from socialized and private farms indicated a 5-percent increase over 1980.

In 1981, the USSR imported 556 million eggs, down 25 percent from 1980. Finland, Poland, Bulgaria, and Hungary continued as traditional suppliers.

Per capita consumption in 1980 reached a record 238 eggs, up by 3 eggs from a year earlier. Per capita consumption in 1981 in all probability rose again by about 2-3 eggs. Despite the large boost in egg production and the rise in egg consumption in recent years, per capita levels remain short of the established nutritional norm by 54 eggs.

Wool

Wool production, as published in the 1981 plan fulfillment report, reached 454,000 tons (on a physical weight basis), down 2 percent from 1980. Heretofore, wool production had been reported on a greasy basis. Converting from published data for 1980 wool production, estimated 1981 wool output reached 474,000 tons (greasy basis). This, compared with wool output on a greasy basis in 1980, would indicate a 3-percent increase in 1981.

Wool (scoured) imports in 1980 totaled 124,200 tons, down 8 percent from a year earlier. Traditional suppliers were Australia, New Zealand, Argentina, and the Mongolian People's Republic. Imports in 1981 probably remained at about the same level. (Angel O. Byrne)

As the crop progressed, hot, dry weather severely reduced yields. In no major beet-growing region, however, did weather data indicate conditions had deteriorated to the degree suggested by the final crop outturn. June-August average temperatures for key areas of the Ukraine, which regularly produces about 60 percent of the beet crop, did not exceed the average temperatures recorded in 1972 and 1975. Precipitation and soil moisture were also within ranges recorded during those years. In 1972 and 1975, overall yields were 22.3 and 18.1 tons per hectare, respectively, but beet yields in 1981 plummeted to 16.7 tons per hectare.

Fearing a repeat of 1980's wet fall weather, the Soviets elected to harvest early—at the expense of weight gain and sugar content. In some areas, combine operators found beets so undersized that their green tops dwarfed the roots themselves. In some areas, only the upper portions of roots were recovered; in others, only green tops.⁹

The 1981 sugar beet procurement target was 91.2 million tons. Actual procurements are not expected to exceed 55 million tons, compared to 64.4 million tons in 1980 (table 9). Significant delays were again reported between the time beets were lifted and transported. In a 24-hour period, beets lose 1 percent of their weight and

⁷*Pravda Ukraina*, July 11, 1981.

⁸*Selskaya Gazeta* (Minsk), May 28, 1981. Translated in FBIS, *USSR Report Agriculture*, No. 1297, September 15, 1981, p. 10.

⁹*Sovetskaya Moldavia*, September 24, 1982.

0.1 percent of their sugar content. Furthermore, the Soviets have perennial problems in delivering a clean crop. At one receiving station in the Bashkir Autonomous Republic, for example, authorities discovered that of the 12 tons of beets delivered by one farm, 60 percent was actually dirt.

The 1981 beet sugar production target was 9.05 million tons. In light of the shortfall in procurements, total beet sugar production in 1981 is expected to fall far short of the target and last year's production as well (table 10).

The USSR began to cover its increased sugar import needs several days before beet production was officially announced. The Soviets were rumored to have been active in world markets and may have purchased up to a million tons of sugar while prices remained low.¹⁰ Cuba is expected to resume its traditional volume of sugar exports to the USSR as its improved 1981 cane harvest boosts export availabilities.

OILSEED SITUATION WORSENS

Sunflowerseed and soybean production fell far below their announced targets and slipped below disappointing 1980 levels. Cottonseed production also declined slightly. Total oilseed production is estimated to have declined from 10.4 to 10.2 million tons. With 2 bad years in oilseed production, vegetable oil output fell to its lowest level in 17 years.

Soviet production of sunflowerseeds in 1981 fell to 4.6 million tons—1.8 million short of target and perhaps 50,000 below 1980. This represented the lowest production since 1963. Hot, dry weather was a major cause, but other factors have contributed to the long downward spiral of sunflowerseed production.

Wet spring weather slowed sunflower plantings to a pace behind even that of 1980. By mid-May, when sowing is usually completed, about 13 percent of the crop still remained to be planted. Sowing was not reported complete until the first week of June. Total area amounted to 4,235,000 hectares. Sukhoveys, the hot, dry winds from Central Asia, hit the crop just as much of it was flowering. Yields were only 1.09 tons per hectare.

Other sunflowerseed problems have been poor farming practices, low quality seeds, shortages of herbicides and pesticides, and improper crop rotation. Plant breeding efforts appear to have increased the seed's vulnerability to bad weather and disease. White and grey mold attacked the crop again this year. To reverse the trend, the Soviets are considering sowing improved hybrid seed on almost 50 percent of the present crop area by 1985.

In the major soybean areas of the Soviet Far East, torrential rains and flooding from storms and typhoons caused extensive damage. Near Khabarovsk, where most of the soybean crop is grown, a major storm dropped the equivalent of a month and a half's rainfall during the first week in August. The Soviet press, usually quite conservative when reporting on domestic difficulties,

Problems within the Soviet sugar industry are hardly likely to be solved in the immediate future. Whether the Government can succeed in getting farmers to better observe proper crop rotation practices remains doubtful. More crop protection agents are needed. In the processing plants, shortages of fuel, limestone, and even bags for packaging sugar are reported regularly. Equipment is not properly maintained, and downtime remains high, with some plants working at only 60-80 percent of capacity. Although complaints about a manpower shortage regularly surface, automation is being introduced slowly. Capital construction remains low, and storage facilities are inadequate. Although five more sugar-processing plants are operating than in 1977, Soviet beet processing capacity totals only 801,000 tons a day.¹¹ (Thomas Bickerton)

called the situation catastrophic. While relief operations were underway, a second heavy storm struck. Soybeans were swept away by rushing water, damaged by standing water, and subjected to waterborne diseases. The expansion of soybean plantings in the European part of the Russian Soviet Federated Socialist Republic (RSFSR), the Ukraine, Moldavia, and Georgia, in recent years, helped moderate the overall loss. Of the total soybean area of 864,000 hectares, nearly three-quarters was sown in the Far East, 12 percent in the Ukraine, and 9 percent in the European RSFSR.

Soybean production may also have been affected by shortages of herbicides and mechanized equipment. Such reports were received before the August storms struck, and, therefore, the situation could only have deteriorated further during the remainder of the year. Soybean yields were not expected to have been much better in the European part of the USSR, where weather and farmer inexperience were also contributing factors. The resulting 450,000-ton soybean harvest was particularly disappointing.

Soviet efforts to expand soybean output were a recurring theme last summer in the national and local press. Farmers were encouraged to expand soybean production to improve the livestock feed base. On June 28, 1981, the Government devoted an entire page of *Izvestiya* to soybeans. At present, more than 80 percent of the soybeans, soymeal, and soyoil consumed is imported, at an estimated cost of \$800 million. In 1981, the Soviets produced an estimated 900,000 tons of soybean meal, down 2 percent from 1980.

The Soviets again produced a good outturn of cottonseed, about 5 million tons. While this was 1-2 percent below 1980's record, it would exceed the average output of the previous two 5-year plan periods. However, oil content has reportedly been falling off because of lower quality seed. Lower grades of seed yielded only 120-150 kilograms of oil from a ton of cottonseed, instead of the 165-180 kilograms usually produced from better seed.¹²

Some improvement in the production of rapeseed may have occurred in 1981. Rapeseed area increased and production should have exceeded 8,000 tons. Since there was no increase in the sown area of flaxseed (for oil) and castor, no increases are expected over 1980's production of 69,000 tons and 31,000 tons, respectively.

¹⁰Commodity News Service, January 21-22, 1982.

¹¹*Sakharnaya Promyshlennost (Sugar Industry)*, No. 4, April 1981, pp. 41-46.

¹²*Maslo-zhirovaya Promyshlennost (Fats and Oils Industry)*, October 1981, p. 12.

USSR oilseed production, 1971-81¹

Year	Sunflower seed	Cottonseed	Soybeans	Other	Total
<i>1,000 metric tons</i>					
1971	5,663	3,691	535	262	10,151
1972	5,048	4,085	258	213	9,604
1973	7,385	4,363	424	343	12,515
1974	6,784	4,531	360	276	11,951
1975	4,990	4,807	780	149	10,726
Average	5,974	4,295	471	249	10,989
1976	5,277	4,511	480	232	10,500
1977	5,904	4,693	540	175	11,312
1978	5,333	4,804	634	243	11,014
1979	5,414	4,510	467	196	10,587
1980	4,652	5,082	525	150	10,409
Average	5,316	4,720	529	205	10,766
1981 ²	4,600	5,000	450	170	10,220

¹Does not include oilseeds from fiber flax and hemp. ²Estimate.

Source: Vestnik Statistiki, various issues.

Production of vegetable oil totaled 2.60 million tons from all sources, down from 1980 when 2.65 million tons were produced. Production in 1981 was about 10 percent below average production achieved during the 3 previous 5-year plans—2.9, 3.0, and 2.8, respectively.

The decline in sunflowerseed production was the main reason for the deterioration. The proportion of vegetable

oil processed from sunflowerseed declined from 89 percent during 1966-70 to probably less than 60 percent in 1981. The other primary sources of vegetable oil are cottonseed, estimated at 25-30 percent, and soybeans, 8-10 percent. To avoid reducing consumption, the Soviets will have to depend on foreign sources. (Thomas Bickerton)

POTATOES, VEGETABLES, AND FRUIT SHORT OF PLAN

USSR potato production in 1981, totaling 72 million tons, was up 7 percent above the disastrous 1980 harvest. Despite the increase in output, however, the crop was 17 percent short of plan and the second smallest in 18 years. The gradually declining potato area fell again in 1981, by 82,000 hectares, to 6,854,000 hectares—the smallest since at least 1950.

Hot, dry conditions over large potato areas, primarily in European USSR, hurt crop development, but some intermittent rainfall prevented further losses. Pest and disease infestations all contributed to the poor crop.

Shortages in the supply of potatoes-for-food reached serious proportions in 1981. Acute shortages, higher potato prices in collective markets, and poor quality of market potatoes continued through 1981 into early 1982. Per capita consumption, which dropped 3 kilograms in 1980 to 112 kilograms, undoubtedly fell again in 1981.

Contrary to a philosophy of several years' standing, Soviet nutritionists seem to be rethinking the role of potatoes in the Soviet diet. In keeping with a decision in 1965, Soviet scientists had anticipated a more efficient diet of fewer carbohydrates and more protein from meat, vegetables, and fruit. More recent revisions in the scientific norm for potato consumption, however, point out the Soviet failure to meet this objective, especially in the face of stagnating output of high-protein foods. Thus, the Soviets were forced again to acknowledge the importance of potatoes. This decision was probably also influenced by the fact that potatoes are relatively cheap to produce and are very amenable to private plot farming.

Total vegetable output in 1981 reached 25.6 million tons last year, down 1 percent from 1980 and almost 9 percent from plan. The vegetable area, at a near-record 1,703,000 hectares, declined by 12,000 hectares. Data for 1981 vegetable production by type are not yet available,

but the make-up of the crop was probably similar to 1980.

Data for 1980 indicate that cabbage (accounting for a quarter of total 1980 vegetable output) and carrots (accounting for 6 percent) rose 7 percent and 24 percent, respectively. Table beets, which accounted for 5 percent of total vegetable output, made negligible gains. Production of cucumbers, tomatoes, and onions (which accounted for 3, 18, and 5 percent of the total) dropped by 20, 16, and 9 percent, respectively, from 1979.

USSR total fresh vegetable imports (including potatoes) in 1981 reached 213,000 tons, up from 133,000 in 1980. Major suppliers were probably Bulgaria, Romania, and Egypt.

Per capita consumption of vegetables (including melons) in 1980, at 93 kilograms, dropped 5 kilograms from a year earlier and was short of plan by 20 kilograms. Per capita consumption was probably unchanged in 1981.

Production of fruit (including grapes) was not included in the USSR 1981 plan fulfillment report. It is estimated that output in 1981 rose somewhat over the greatly reduced level of 14.6 million tons in 1980. Data on production of types of fruit in 1981 are not available yet. In 1980, however, grape production rose to a record 6.6 million tons. Stone fruits rose a third, while citrus fruit dropped by over half, and pome fruits and berries fell by over a quarter.

In 1980, Soviet imports of fresh fruit totaled a record 995,000 tons, up 10 percent from 1979. Apples, oranges, and lemons accounted for the bulk of imports. Lemon imports rose sharply, up by almost two-thirds to a record. Morocco, Cuba, and Egypt were the major suppliers of oranges, while Hungary, China, and Bulgaria were the major suppliers of apples. Most lemon imports came from

Spain, Greece, and Turkey. Imports of lemons from the United States in 1980, at 4,605 tons, dropped 39 percent. In 1981, Soviet fresh fruit imports reached a record 1 million tons.

USSR dried fruit imports in 1980 reached a record 130,000 tons, up 19 percent from the reduced 1979 level. Imports of prunes jumped about two-thirds, dates by over a third, and raisins by 15 percent. Turkey was the single

supplier of prunes, Iraq the single supplier of dates, and Afghanistan the major supplier of raisins.

Per capita consumption of fruits and berries in 1980, at 34 kilograms, dropped by 4 kilograms from 1979, was 10 kilograms below plan, and was the lowest level of consumption in about 10 years. Consumption probably remained about the same as or made a small gain over the depressed 1980 level. (Angel O. Byrne)

COTTON PRODUCTION DOWN

USSR cotton output in 1981 reached a near-record 9.6 million tons (seed basis) or nearly 13.8 million bales (lint basis). Seed cotton output fell 360,000 tons from the 1980 record but was still 300,000 tons above plan. Cotton area totaled 3,168,000 hectares, up 21,000 hectares from the 1980 record.

Unfavorable spring and early summer weather caused many difficulties with the 1981 crop. Torrential rain, high winds, and cool weather took place from April through at least mid-June over most of the cotton-growing regions of Soviet Central Asia, washing away newly planted seeds, rotting seeds, forming heavy soil crusts which inhibited emergence of plants, and considerably delaying plant development. Large areas had to be reseeded. July and August conditions improved, however, as hot, dry weather enhanced plant growth and boll development. Favorable fall weather and generally warm and dry conditions in November helped prevent further damage.

Based on an estimated 31.2-percent ginning rate, cotton lint outturn from the 1981 crop will reach an estimated 3 million tons, down 4 percent from outturn of the excellent 1980 crop (table 11). The ginning rate used may be high, though, especially since the crop was below-average quality.

Following the excellent crop in 1980 and the near-record in 1981, USSR cotton lint exports in 1981 probably increased, but domestic demand remains high and

the Soviets have not been aggressive exporters. In 1980, Soviet exports of cotton lint, at 843,200 tons, rose 7 percent above 1979's reduced volume. East European countries, as in the past, accounted for the bulk, or a little over 500,000 tons. Outside of Eastern Europe, exports to France rose 11 percent and sales to Japan, the second largest buyer, decreased.

USSR cotton lint imports in calendar 1980 fell 43 percent to 49,300 tons, the lowest import level in 25 years. Traditional suppliers were Syria, Afghanistan, and Iran. The downward trend is expected to continue as domestic production of higher-quality cotton increases.

Cloth output in 1981 rose close to 3 percent over a year earlier and reached 11 billion square meters. Cotton cloth output reached 7.2 billion square meters, up 1 percent from 1980. Output of other types of cloth have not yet been reported.

Data on Soviet cloth trade are not available for 1981, but in 1980 Soviet imports of cotton cloth, at 227 million meters, rose by over a third, and exports rose by over a fifth. India, Pakistan, and Hungary supplied the bulk of imports. The Mongolian People's Republic, Cuba, and Vietnam were the major recipients of Soviet cotton cloth. Exports to Vietnam rose sharply—from 426,000 meters in 1979 to 22 million meters in 1980. Cotton yarn imports rose 21 percent in 1980, and exports rose 42 percent. (Angel O. Byrne)

FOOD SHORTAGES WIDESPREAD

Food supplies in the USSR were probably tighter in 1981 than they were in the previous year. At a recently completed Communist Party Plenum (November 16, 1981), General Secretary Brezhnev pointed out: "The problem of food is, on the economic and political level, the central problem of the whole 5-year plan." At the 1980 October Plenum, he listed improvement of the food supply as the first priority in raising living standards in the Soviet Union.

Western correspondents in Moscow carried numerous reports of 1981's worsening food situation.¹³ These stories generally focused on the long lines at meat and dairy outlets, the poor quality of available supplies, the short supplies of milk and butter, the high cost of fruits and vegetables in collective farm markets, and the number of people from out of town who shop in Moscow. Generally, Moscow is much better provisioned than cities in the provinces.

The Soviet press also carried much the same stories. In October, the Minister of the USSR Meat and Dairy Industry¹⁴ reported:

The demand for certain kinds of produce, especially meat, is not being fully satisfied. There are justified complaints from the consumers regarding the quality of products. The packaging of many products does not meet the demands of the consumers. Workers in the food industry are aware of these difficulties and shortcomings and will make every effort to meet more fully the demand of the Soviet people for high-quality foodstuffs.

The first official confirmation of rationing of livestock products appeared in a speech on November 24, 1981, by E. Schevardnadze, First Secretary of the Communist

¹³See, for example, *The Washington Star*, February 8, 1981; *The Washington Post*, September 3, 1981; *Le Monde* (Paris), December 4, 1981; and *The New York Times*, January 15, 1982.

¹⁴FBIS, *Daily Report: Soviet Union*, October 20, 1981.

Party of the Republic of Georgia. *Zarya Vostoka* (November 26, 1981) quotes him as saying:

...in view of the fact that rationing of livestock products is being introduced for the urban population, certain difficulties will arise for rural area dwellers who can no longer buy up large quantities of butter and meat in city stores as they used to do.

Schevardnadze called for Party and State officials to crack down on hoarding and speculation in livestock products. Two days prior to the publication of his speech, the Georgian daily, *Kommunist*, reported butter shortages in Georgia and the arrest of a number of people for speculating in butter.

The rationing system seems to have a local rather than national character. In Moscow, and perhaps Leningrad as well, rationing seems to be informal, but more formal coupon systems are in effect in other cities. Red meat, sausage, and butter seem to be more strictly controlled than other items.

District officials interviewed on Lvov (Ukraine) television¹⁵ discussed the food supply in the district, and the "number of letters" complaining about meat and butter supplies. The panel emphasized that children's and health organizations and public catering enterprises (i.e., canteens for workers and students) were to receive supplies of livestock products on a priority basis. The panel also chastised those who were buying unnecessarily large quantities of bread and sugar, using the former to feed animals and the latter to produce homemade alcohol. While noting that "allocations of some types of foodstuffs are even higher than last year," a panel member stated that "the population's requirements for meat are not

being met in full, especially such items as meat, salami, and butter. At the same time, allocations of flour, groats, margarine, sugar, candy, canned vegetables, fish, and a number of other foods this year remain at the 1980 level..."

Soviet media devoted much attention to bread conservation. As the harvest approached, *Pravda* (July 16, 1981) editorialized on the "careless attitude" toward bread, citing extravagance and waste in bread consumption, and the need to produce smaller-sized loaves in order to reduce leftovers. The article also noted that "...fodder concentrates intended for sale to members of the public [who keep livestock] frequently go [instead] to kolkhozes and sovkhozes. This practice leads to bread being used to feed livestock on personal plots. Strict supervision must be established here."

Similar articles appeared in *Radyanska Ukraina* (Kiev) on August 13, 1981, and again in *Pravda* on October 19. The second *Pravda* article noted that more than 5 percent of all bread baked ends "in the trash can"—an amount sufficient, the article claimed, to feed two republics such as Belorussia and Armenia, plus two Russian cities.

Soviet campaigns to conserve bread are not new, and Soviet grain production even in poor years is enough to meet food demands. However, the tight feed situation is probably putting unusual pressure on bread supplies. Vegetables (periodically), high-quality margarine, confectionary, pastries, nonalcoholic drinks, mayonnaise, and mineral water were other products said to be in short supply. (Anton F. Malish)

¹⁵FBIS, *Daily Report: Soviet Union*, December 8, 1981.

CONSUMPTION NORMS CHANGE FOR MAJOR FOOD ITEMS

The October 1981 issue of *Planovoe Khozyaistvo* (*Planned Economy*) indicated significant adjustments in the consumption norms for major food items.¹⁶ Although these consumption norms do not have the force of law that various production norms do in the USSR, they are important in that they represent country-wide standards of nutrition and hence enter agriculture's planning process as part of the country's requirements. The changes involve reductions in the norms for meat, dairy, vegetable, and fruit consumption, while increasing the norm for potatoes (table 12).

The fundamental goal of Soviet agricultural policy in the post-World War II period has been reflected in generally increasing norms (according to Soviet publications issued between 1969 and 1978) for meat, milk and milk products, vegetables and melons; and static or decreasing norms for high-calorie, low-quality foodstuffs such as grain (flour), potatoes, and sugar. The sudden reduction in the norms for meat, vegetables, and fruit—to lower than any level published in the 1970's—and the compensatory increases in potatoes contrast sharply with past trends.

Per capita consumption norms are based on calorie and protein content and quality expressed as the content of essential amino acids. These scientifically established norms take into consideration actual consumption in previous periods and the Soviet family's purchasing power.

The consumption norms may have been changed because targets set for the Eleventh 5-Year Plan are overly ambitious. In light of 1981's poor performance, the Soviets are not anxious to publish data showing major failures in fulfilling their nutritional norms. The 1981 revisions contributed significantly to improving the appearance of Soviet consumer satisfaction in a number of commodities. In terms of the new norms, meat and fat consumption in 1980, for example, reached nearly three-quarters of the standard, while potato consumption, which had been much higher, dropped to 102 percent of the norm.

¹⁶Nutritional norms in the USSR are set by the Institute of Nutrition of the USSR Academy of Sciences.

USSR FOREIGN TRADE

Overall Trade

In 1981, the value of Soviet foreign trade amounted to about 110 billion rubles (about \$153 billion at 1981 official exchange rates), up about 17 percent from the previous year.¹⁷ Exports were valued at 57 billion rubles (\$79 billion), and imports at 52.6 billion rubles (\$73 billion).

For the fifth consecutive year, the value of Soviet exports exceeded the value of imports. In 1981, this trade surplus amounted to 4.5 billion rubles, down 13 percent from that in 1980. It originated primarily from trade with other socialist countries. Exports to Council for Mutual Economic Assistance (CMEA) countries exceeded imports by about 5 billion rubles. Within CMEA, the greatest imbalance recorded through September (totaling about 1.2 billion rubles) was attributable to Soviet trade with and assistance to Poland. The second largest trade imbalance, about a half billion rubles, resulted from trade with Bulgaria. Trade with CMEA countries constituted 48 percent of total Soviet trade turnover; trade with all socialist countries constituted 53 percent of total Soviet trade turnover.

Soviet trade with nonsocialist countries, on the other hand, was characterized by an excess of imports over exports, straining Soviet hard currency reserves. As 1981 drew to a close, the Soviets moved to reduce this deficit, which had risen to 2.8 billion rubles (about \$4 billion) by the end of second-quarter 1981. By October, they had reduced the deficit by selling large amounts of gold, fuel oil, and other commodities, and they ended the year in near balance.

Through September, the USSR's leading trading partners among nonsocialist industrialized countries were ranked in the following order: West Germany, Finland, France, Italy, Japan, the United Kingdom, and the United States. Of these countries, the Soviets recorded deficits of about \$1.4 billion each with the United States and Japan. The largest deficit of all, totaling more than \$2.8 billion, resulted from trade with Argentina.

Trends in Agricultural Trade

Official Soviet trade data are reported in *Vneshnyaya Torgovlya v SSSR*, with 1980 being the most recent issue available. From other sources, partial trade data for 1981 can be obtained.

In 1980, Soviet agricultural imports were valued at about \$16.8 billion, up by 26 percent from the year before (table 13). Grain and sugar made up about half of all agricultural imports. Imports of meat and meat products have shown spectacular gains since 1978.

The increase in agricultural imports occurred while the United States maintained a partial embargo on commodities destined for the Soviet feed-livestock economy. Thus, the expansion occurred for the most part in purchases from U.S. competitors. While the value of grain imports from the United States fell by more than 50 percent, the value of imports from U.S. competitors increased dramatically. Yet, because the United States

USSR foreign trade

Direction	1979	1980	1981
<i>Billion rubles</i>			
Exports	42.4	49.6	57.1
To Socialist countries	23.6	26.9	31.2
To Western industrialized countries	12.5	15.8	17.2
To Developing countries	6.3	6.9	8.7
Imports	37.9	44.5	52.6
From Socialist countries	21.5	23.7	26.7
From Western industrialized countries	13.2	15.7	18.1
From Developing countries	3.2	5.1	7.8

held to its international commitment to supply the Soviets up to 8 million tons of corn and wheat, the United States still ranked second among major suppliers of grains, even while the embargo was in effect.

Grain was the principal agricultural import item, valued at about \$4.9 billion, representing about 30 percent of total agricultural imports. Grain imports amounted to about 28 million tons (table 14). Imports of wheat, the primary grain purchased abroad, increased 55 percent in volume to about 15 million metric tons. Imports from the United States fell by about 60 percent; imports from Canada and Australia almost tripled. The USSR purchased less corn in 1980 than in 1979, as imports fell 31 percent in volume to 10 million metric tons. More than half of this corn was purchased under the U.S.-USSR Grain Agreement. Argentine sales more than doubled, and Canadian sales rose over tenfold.

Raw and refined sugar imports were valued at about \$3.9 billion. These imports accounted for 23 percent of Soviet agricultural imports and consisted mostly of raw sugar from Cuba, although Cuban shipments to the USSR fell by almost 30 percent. Brazilian shipments grew almost eightfold, from 48,000 metric tons to 385,000. Soviet purchases of refined sugar continued to expand.

Meat and meat products, the third largest agricultural import in value, jumped 61 percent and were valued at about \$1.4 billion. In 1980, Argentina, Romania, New Zealand, and Australia were the major suppliers of fresh, frozen red meat. Hungary continued to be the major supplier of fresh, frozen poultry meat, although imports from the Netherlands, the second largest supplier, almost doubled in volume.

Oilseed imports fell by one-third, and soybean imports by about 40 percent, from about 1.8 million metric tons to 1.1 million. Although the Soviets were expected to make up all the denied soybean and soybean meal from other suppliers during the sales suspension, 1980 trade data suggest they might not have been that successful. The Netherlands increased sales of soybean meal to the USSR from 25,000 tons in 1979 to 438,000 tons in 1980. This increase in meal amounted to a soybean equivalent of more than 500,000 tons.

Imported beverages rose 13 percent. Bulgaria, Hungary, and Romania were the major suppliers of wine. Coffee, cocoa, and tea imports were ranked fifth in value and were relatively unchanged. Fruit and berry imports rose 22 percent. Tobacco and tobacco products increased 17 percent, with Bulgaria supplying about half and India

¹⁷Dollar figures are converted from official Soviet statistics using U.S. dollar exchange rates for the Soviet foreign exchange ruble as announced by the State Bank of the USSR. In 1981, one ruble averaged \$1.39. Exports and imports are valued FOB.

about a quarter. Animal fats and butter almost doubled in value, while vegetable oil imports rose 77 percent.

USSR agricultural exports in 1980 amounted to \$2.7 billion, down 2.7 percent from a year earlier (tables 15 and 16). The leading agricultural export category was natural fibers, with cotton accounting for all but 2 percent of the total. Poland was the largest recipient of cotton and received more Soviet grain than any other CMEA country, taking almost 18 percent. Total Soviet grain exports fell by 45 percent in 1980.

Complete agricultural trade data for 1981 are not yet available. However, it is likely that the value of imported agricultural commodities exceeded \$19 billion and represented at least a quarter of total Soviet imports.

In 1981, Soviet grain imports continued to set records. USDA estimates total grain imports at about 40 million tons, valued at about \$6 billion and representing about a third of Soviet agricultural imports. Argentina supplied about 15 million tons, much more than the minimum amount called for in its long-term grain supply agreement. The United States supplied about 9.5 million tons and Canada nearly 8 million.

USDA estimated that Soviet soybean imports amounted to 1.3 million tons. Brazil and Argentina were principal suppliers. Soybean meal imports were probably about 1.2 million tons. The European Community and Brazil supplied the bulk of meal imports. During 1981, the Soviets moved to further secure their sources of supply by reaching a long-term agricultural supply agreement with Brazil, which is committed to provide the USSR with annual shipments of 500,000 tons of soybeans, 400,000 tons of soybean meal, and 40,000 tons of soybean oil. Under an existing agreement with Argentina, that country is to provide a minimum of 500,000 tons of soybeans annually. In 1979, the USSR purchased about 27,000 tons from the United States, but it has not returned to the U.S. market for meal since the sales suspension of 1980. While the Soviets can probably meet their meal needs without resorting to the United States, the technical assistance U.S. firms can supply on the handling and utilization of soybean meal might provide the basis for renewed sales.

Soviet imports of meat and meat products probably amounted to about a million tons and were valued at perhaps more than \$1.7 billion.

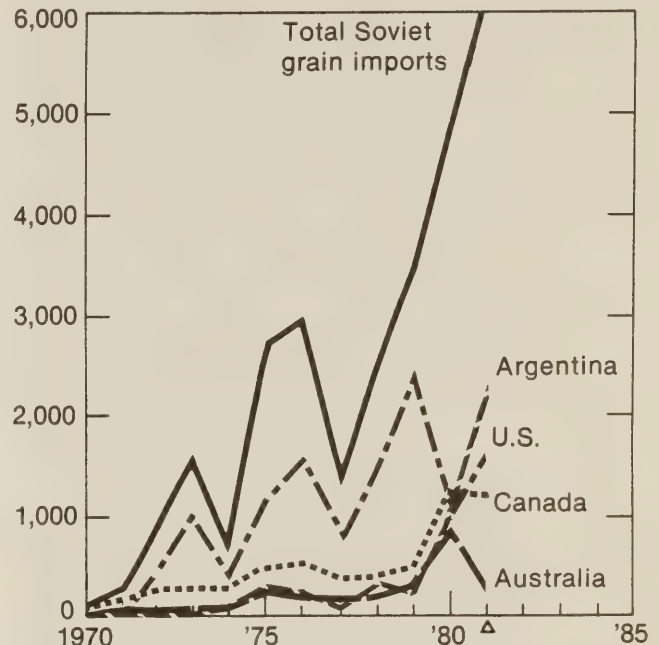
During 1981, the Soviets were estimated to have purchased 4.2 million tons of raw and 1.5-1.8 million tons of white sugar. Cuba supplied about 3.5 million tons of raw sugar, with the Philippines and possibly Brazil supplying the bulk of the remainder. Most of the white sugar likely came from Western Europe.

With agricultural imports rapidly growing, the Soviet Government took measures to improve both port capacity and transportation away from the port areas. Among other improvements, five new floating docks (elevators) have been installed, two at Baltic ports and three at Black Sea ports. These permit faster discharge of grain onto river barges and smaller vessels, and more are likely to be installed in the future. Expanded use of waterways can take some pressure off the rail network for moving grain. Cargo pier space and port area improvements have also been noted. Estimates of Soviet port capacity for grain are now in the range of 45 million tons, up from 36 million just over a year ago. The improvements not only permit expanded volumes but also reduce unloading time in port. (Some cargoes were reported delayed as long as 3 months, although the average waiting period is now about 1 month.) (Thomas Bickerton)

Figure 2

USSR Grain Imports by Country of Origin 1970-1981

Mil. dollars

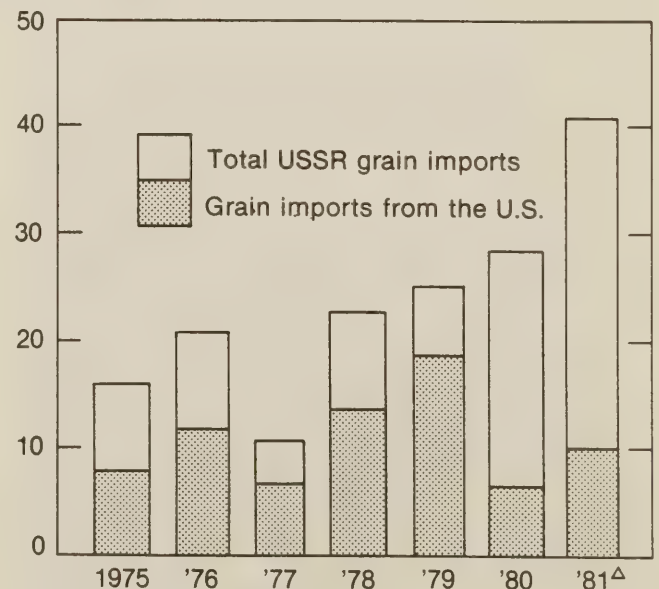


△Estimates.

Figure 3

USSR Grain Imports, Total, and from the United States

Mil. tons



△Estimates.

U.S.-USSR TRADE

In 1981, the total value of U.S. exports to the USSR increased to \$2.4 billion. The value of U.S. imports fell to \$357 million. Agricultural commodities represented nearly three-quarters of all U.S. exports to the USSR. Approximately one-third of U.S. imports from the USSR consisted of fuel oil and naphthas. Anhydrous ammonia accounted for about a fifth of all imports.

U.S. Agricultural Exports and Imports

The value of U.S. agricultural exports to the USSR reached \$1.7 billion (when adjusted for transshipments) in 1981 (table 17). While exports exceeded 1980 totals by about \$590 million, they fell about \$1.3 billion short of the 1979 level of sales to the Soviets.

Grain continued to dominate exports of agricultural commodities. Corn and wheat sales totaled \$1.6 billion and comprised 95 percent of U.S. agricultural exports to the USSR. U.S. exports of corn increased by one-fifth and wheat exports more than doubled in comparison to 1980.

In the 1974/75-1978/79 period, the United States regularly supplied the Soviets about half of their average annual wheat imports (then about 5.8 million tons). Since then, Canada, Australia, and Argentina have increased their market share. Although U.S. wheat sales for the 1981/82 year, at 6.6 million tons, would be the second highest, the U.S. share has fallen to about a third. Over the past decade, corn dominated Soviet coarse grain imports, and the United States was the principal beneficiary of this expanding trade. Even here, however, the U.S. market share has eroded, and in addition, the Soviets have expanded the kinds of feed grains imported. Canada and Argentina made inroads at the expense of the United States.

U.S. soybean sales to the Soviets totaled only about \$8.6 million in 1981, about one-fifth of 1980 sales and about 2 percent of 1979 sales. The Soviets returned to American markets in late 1981 to resume buying soybeans in large quantities. In October, a 500,000-ton sale to the USSR was announced. Since that announcement, the Soviets have bought an additional 200,000 tons. Export of these soybeans is scheduled for 1982.

Tallow sales to the USSR rose to \$48.5 million in 1981, up almost three-quarters from 1980. The Soviets buy

about 8 percent of all U.S. tallow exports. While Soviet purchases of U.S. almonds slipped about 10 percent to \$16 million, they have more than doubled since 1979. U.S. sugar exports to the USSR almost quadrupled over those of 1980. Sales of hops to the Soviets continued to increase, rising by one-fifth over 1980 and almost doubling 1979 sales.

About \$7.6 million of U.S. cottonseed and linseed oil was sold. The Soviets last bought vegetable oil from the United States in 1979, when they purchased about \$16 million of soybean oil. In contrast to 1980, lemons, cotton, and tobacco products did not appear in 1981 U.S. exports to the USSR.

The value of Soviet agricultural goods imported in 1981 amounted to about \$12 million. Approximately three-quarters of U.S. purchases were furskins, primarily sable.

Trade Policy Developments

On April 24, 1981, the President lifted the partial embargo on agricultural goods and phosphate exports. This action followed an assessment of U.S. national security, foreign policy, and agricultural needs. With the termination, U.S. exports of agricultural commodities destined for the USSR reverted to the general licensing procedures in effect before the U.S. partial embargo. Trade began to recover shortly thereafter.

Under the terms of the U.S.-USSR Grain Agreement, additional sales of wheat and corn, the only two commodities covered by the agreement, could not immediately resume after the embargo ended because the Soviets had already purchased the full 8 million tons after which consultations between the Governments were required. Such consultations were held June 8-9, 1981, and the United States made available to the Soviets an additional 3 million tons each of wheat and corn. Thus, the Soviets were offered 14 million tons of U.S. grain in the fifth year of the agreement.

On August 5, 1981, U.S. and USSR negotiators concluded a 1-year extension of the agreement, previously scheduled to expire September 30, 1981. Consultations again occurred September 30-October 1, 1981, in Moscow. At that session, the United States offered an additional 15 million tons of wheat and corn over the 8-million-ton level for the sixth agreement year.

U.S. trade with the USSR, 1972-81¹

Year	U.S. Exports			U.S. Imports		
	Total	Agricultural	Nonagricultural	Total	Agricultural	Nonagricultural
Million dollars						
1972	542	430	112	88	4	84
1973	1,191	920	271	204	5	199
1974	607	300	308	334	9	326
1975	1,834	1,133	701	243	7	236
1976	2,306	1,487	819	215	8	206
1977	1,621	1,037	584	221	11	210
1978	2,249	1,687	563	530	12	517
1979	3,604	2,855	749	873	15	858
1980	1,510	1,047	463	431	10	421
1981 ²	2,430	1,665	765	357	12	345

¹No adjustments made for transshipments. ²Preliminary.

The Soviets resumed grain purchases in August. During the fifth year of the agreement, they purchased 9.4 million tons. By March 1982, they had purchased 13.4 million tons (5.9 million wheat, 7.5 million corn) for delivery in the extension year (October 1, 1981 to September 30, 1982) of the agreement.

On December 29, 1981, the President announced seven new economic sanctions against the Soviets because of their "heavy and direct responsibility for the repression in Poland."¹⁸ These sanctions included: (1) postponing negotiations on a new long-term grain agreement; (2) suspending negotiations on a new U.S.-USSR Maritime Agreement; (3) closing the Soviet Purchasing Commission; (4) expanding the list of oil and gas equipment for which export licenses are required (issuance of such licenses is also suspended); (5) suspending issuance and renewal of licenses for electronic and other high-technology equipment; (6) nonrenewal of certain U.S.-USSR exchange agreements; and (7) suspending all U.S. service by the Soviet airline, Aeroflot.

Postponing renegotiation of the U.S.-USSR Grain Agreement did not affect current arrangements. The Maritime Agreement expired on December 31, 1981, but its termination did not seriously disturb grain shipments. The U.S. Maritime Administration reported that third-country ships carried almost 70 percent of U.S. grains since the Maritime Agreement's inception in 1972. The other sanctions only remotely involved U.S. agricultural trade.

While the United States made clear that it would not selectively embargo agricultural commodities, considerable uncertainty existed in early 1982 over the possibi-

U.S. exports of grains and soybeans to the USSR, 1971-81

Year	Total grain	Wheat	Corn	Other grains	Soybeans
<i>Million metric tons</i>					
1971	0.2	(1)	0.2	(1)	0
1972	6.8	2.7	3.1	1.0	.4
1973	12.9	8.7	4.2	0	.5
1974	3.1	1.1	2.0	0	0
1975	7.4	4.1	3.2	.1	0
1976	10.6	1.7	8.8	.1	.6
1977	6.7	3.0	3.6	.1	.6
1978	12.9	2.9	9.9	.1	.7
1979	17.6	5.4	12.0	.3	1.8
1980	6.0	1.8	4.2	0	.2
1981	9.5	4.1	5.4	0	(1)

¹Less than 50,000 tons.

Note: Transshipments not included.

ty of total trade embargo to be taken in unspecified circumstances. In March 1982, the President affirmed that farm exports would not be used as an instrument of foreign policy except in extreme situations when national security was threatened, and then only in the context of a broader embargo when the cooperation of other nations could be obtained. (Thomas Bickerton)

¹⁸Presidential Statement issued December 29, 1981.

U.S.-USSR AGRICULTURAL AGREEMENT

In June 1973, the United States signed a 5-year agricultural agreement with the Soviet Union, one of 11 such cooperative agreements established during the 1970's in the fields of atomic energy, environmental protection, energy, housing, medicine, the ocean, public health, science and technology, space, and transportation. The agreement is automatically renewable for successive 5-year periods unless either side notifies the other of its intent to terminate the accord 6 months prior to expiration of its current operating period. If the agreement is to be terminated, a decision must be made by December 1982.

The purposes of the agreement are to "expand existing cooperation" in agricultural research and development; to "apply new knowledge and technology in agricultural production and processing"; and to expand "relationships in agricultural trade and the exchange of information necessary for such trade."

To achieve these purposes, two working groups were set up under a joint committee to develop substantive programs of cooperation. One of these bodies, the economic working group, sought to establish cooperative programs in four areas: (1) information exchange, (2) forecasting, (3) agribusiness, and (4) interlibrary exchange. The information exchange program would regularly provide each side with data on the other's sown area, output, yields, fertilizer usage, livestock numbers, feed consumption, product sales levels, and food consumption, among other subjects.

The working group on research and technology was established to develop cooperative programs on (1) plant science, (2) livestock science, (3) soil science, and (4) mechanization.

As a result of the Soviet invasion of Afghanistan, the United States suspended high-level Government contacts with the Soviets. Since the joint committee is chaired at the Under Secretary level, the January 1980 meeting of the committee was postponed indefinitely. The United States proposed that activities continue at the working group level, under the direction of the executive secretariat, but the Soviets responded that no activities could be undertaken without the joint committee first agreeing to schedules and agendas. Although the Soviets agreed to continue at the technical exchange level on all of the other agreements, they terminated their activities under the Agricultural Agreement.

From 1973 through 1979, scientific exchanges with the USSR involved 61 U.S. and 64 Soviet delegations, including 219 U.S. scientists and 252 Soviet scientists. In the economic working group, forward estimates for major crops, the highest priority for the United States, were never provided by the Soviets, but most agreed categories of data were provided as scheduled. A cooperative program in short-term crop forecasting methodology never developed, and the agribusiness project remained only loosely defined. The pace of in-

terlibrary exchanges remained unaffected by the agreement.

After January 1980, the Soviets stopped delivering any economic information. The Soviets, of course, have little interest in information exchange, since the basically open U.S. system provides ready access to published agricultural information. On the other hand, the Soviets value the exchange of technological information, and while the agreement has been dormant, they have negotiated a number of technical exchanges and cooperative agreements with private U.S. firms. During 1981, they negotiated a bilateral agreement with Canada through which information and experts can be exchanged.

1982 OUTLOOK

The value of gross agricultural production in 1982 is planned to reach 136.5 billion rubles, 1.1 billion rubles above the planned level in 1981 but 14 percent above the published output in 1981. Based on current conditions, prospects for meeting this high goal appear poor. In each of the past 6 years, gross agricultural production has fallen short of annual goals.

The poor agricultural performance in 1981 coincided with the first year of the Eleventh 5-Year Plan. The plan was adopted in November 1981, after the magnitude of the shortcomings should have been apparent to Soviet planners. Perhaps for this reason, Soviet crop and livestock production targets in 1982 have not been officially announced. The January issue of *Ekonomika Selskogo Khozyaistva* (*Economics of Agriculture*), however, gave data for deriving some 1982 crop production plans.

The derived 1982 grain target of 238 million tons (i.e., a 16-percent increase over actual output in 1976-80) shows little change from the 1981 plan. Planned output of this magnitude—and the ultimate goal of 1 ton per capita in 1990—dates from the July 1978 Plenum on Agriculture, which coincided with a record output of 237 million tons. On the other hand, if the 1981 crop is as high as 175 million tons, output over the next 4 years would have to average 255 million tons per year to meet the recently adopted targets. Since output on this scale is a clear impossibility, some scaling down of the average target for 1981-85 will likely occur, perhaps at the end of next year.

Conditions through early March suggested an average to above-average crop could occur. Winter grains were sown on 35.5 million hectares, up 4 percent from last year. Radio Moscow's Domestic Service (February 20, 1982) reported adequate snow cover over the winter grain fields, and added that even where there was less snow, the wintering of crops was "completely satisfactory." The same source quoted a specialist with the RSFSR's Ministry of Agriculture (March 3, 1982) as saying: "All farms are fully supplied with seed for spring crops of better quality than last year." Top dressing with mineral fertilizers was reportedly more extensive than was carried out last spring. On the other hand, April press reports shifted emphasis from the generally satisfactory overwintering, to early season difficulties.

Targets for hay and silage in 1982 are 77 million and 264 million tons, respectively. Weather factors and the plan emphasis on fodder production suggest at least a good initial forage cut. Still, targets are so far above

One of the economic sanctions following events in Poland was a decision not to renew U.S.-Soviet agreements on space, energy, and science and technology, and a decision to review carefully the other cooperative agreements as they come up for renewal.

While the Agricultural Agreement generated only partial results, it is possible that the publication of certain Soviet statistics in open sources resulted from the agreement's requirements to provide like data. Given the trend to reduced publication of economic data in the USSR, the implementation of provisions under the agreement could produce useful information not otherwise available.

reported performance that they hardly seem likely to be achieved.

The Soviets also are not likely to fulfill their 1982 sugar beet production goal of 98.2 million tons. Only once in the past have they reached such a level—in 1976, when production totaled 99.9 million tons. The second largest beet crop, in 1978, amounted to 93.8 million tons. The 1982 procurement target of 89.8 million tons and the 1982/83 beet sugar production goal of 9.7 million tons are unrealistic. The 1982 procurement target is almost 5 million tons more than the procurement achieved in bumper year 1976. Even with better weather, production will continue to be hampered by, declining sugar content, improper crop rotation and harvesting practices, and inadequate application of agricultural chemicals.

The derived 1982 target for sunflowerseed also shows little change from that of a year earlier. The target of 6.54 million tons—a stated 23-percent increase over output in 1976-80, and 42 percent above actual output in 1981—is unattainable. Sunflowerseed production in the USSR has stagnated in recent years and will continue to do so unless strong measures are taken to introduce better sunflower varieties and also to combat disease problems. April press reports made particular mention of shortages of sunflowerseed, and seeds for soybean, rape, and other oil-bearing crops as well.

Vegetable production in 1982 is targeted at 28.6 million tons, 2 percent above the 1981 plan and almost 12 percent above actual output. Assuming more favorable weather in 1982, this target is within reach. A level only slightly lower than the 1982 target was reached in 1978.

The derived 1982 target for potatoes, 88.4 million tons, is 2 percent below the 1981 plan, but almost 23 percent above the 1980 crop. Such a target, however, is well within past performance. With more favorable weather, this scaled-down target should be within reach.

Since about 1971, USSR annual potato production plans have been gradually lowered in response to the policy decision to lower carbohydrates in the Soviet diet. However, lowering the 1982 output plan and, at the same time, raising the scientific consumption norm for potatoes appears to be contradictory. An explanation could be that the importance of potatoes as food is being reemphasized, while fewer will be used for livestock feed.

The framework for deriving a 1982 target for cotton production was not published in the January 1982 journal. However, published plans of the cotton-producing

republics point to a goal of 9.3 million tons (seed basis), the same as in 1981. Based on past performance, there is little doubt that this goal can be met and surpassed by several thousand tons.

Consecutive poor crops in the feed area—grains, forage, sugar beets, and potatoes—and external factors have seriously slowed the Soviets' expansion of animal herds. Nevertheless, according to their publications, the Soviets have maintained inventories of most categories of animals. This has largely been achieved, however, by accepting lower productivity. Should crop outturn improve in 1982, Soviet livestock policies adopted over the past year could begin to show results. For example, the practice of fattening livestock under agreements between private-plot holders and state and collective farms is reported to be spreading. The monitoring service of the BBC (January 15, 1982) quoted Radio Riga as saying that "practically all" state and collective farms in Latvia have entered into such agreements, and that beginning January 1, 1982, the procurement prices of cattle and hogs from private owners would be raised and standardized throughout Latvia. Moreover, the Soviets continue to invest (although perhaps less heavily than last year) in the construction of large livestock-raising complexes and mechanized livestock units. Accordingly, if herds were maintained over winter, the potential for further inventory growth in most categories of livestock probably exists, with hogs a possible exception.

The 1982 goals for meat and dairy production cannot be derived from the source cited. However, 5-year plan data imply a 1982 meat production goal of about 16.5 million tons. Meat output in 1982 could reach 15.4-15.6 million tons—not too impressive considering the fact that output was 15.3 million tons in 1979 and 15.5 million in 1978. Since production data for the socialized sector during the first 2 months of 1982 showed a 5-percent decline from the same period in 1981, a substantial turnaround would have to take place to achieve even this modest improvement.

It would appear from the record cow inventories on hand that milk production in 1982 should make a better showing than in 1981, yet in the past 4 or so years milk production declined. Despite the outlook for better roughage and grain availabilities other inherent problems are expected to continue. Thus, milk output could remain at about the low 1981 level, but more than likely will show a further decline of around 1-2 percent in 1982. With the expected shortfall in milk production, butter output will probably also decline.

Egg production is expected to continue as the bright spot in livestock production. Although the 1982 goal is not available, output is expected to reach a new high, surpassing the previous record in 1981 by about 2-3 percent.

Even with a return to more normal levels of crop production in 1982, Soviet demand for agricultural imports is expected to remain high. If the 1981 grain crop

reached 175 million tons, and if trend output for the remainder of the 5-year plan period were obtained, grain production would only average about 210 million tons. Meat production and herd expansion are at least a year behind planners' expectations. In short, even with better weather, Soviet grain import needs can be placed at about 35 or so million tons per year on the average through 1985, with more than that needed early in the period to rebuild stocks.

Following the partial embargo, the Soviets moved to secure other grain supply sources as their first choice, signing various long-term supply agreements with Argentina, Canada, and Brazil. The possibility of a disruption of U.S.-Soviet trade cannot be dismissed, but stated U.S. policy and the embargo protection provision of the Agriculture and Food Act of 1981 mean that circumstances would have to be dire before a total embargo on Soviet trade could arise. Thus, on balance, the recognized advantages of buying in the United States would seem to ensure significant purchases of U.S. grain.

Imports of raw sugar are expected to remain at high levels. Relatively low sugar prices in world markets should encourage Soviet purchases of non-Cuban sugar, with some small buys possible from the United States.

The most significant increases in imported agricultural commodities are expected to occur in soybeans, vegetable oils, and soybean meal. Imports are needed to offset the declines in domestic production, and to provide badly needed protein supplies in livestock rations. The long-term agreements signed with Brazil and Argentina may give an advantage to imports from those sources, but the Soviets seem willing to buy U.S. soybeans—they have contracted for about 700,000 tons for 1982 delivery—and might return as meal purchasers under appropriate circumstances.

In 1981, the Soviets imported about a million tons of meat and meat products, making them the largest net importer in the world. The Soviets were active purchasers of poultry meat for first-quarter 1982 delivery, and the need to maintain per capita consumption in 1982 suggests that continued large imports of meat and meat products, as well as livestock byproducts, will continue. Similarly, butter imports in 1982 are expected to exceed last year's level.

Other commodities with good prospects for export to the USSR include peanuts, almonds, hops, flour, and fruits. Furthermore, U.S. plant and animal technology (seeds, breeding stock, semen, etc.) should be attractive products for the Soviets. Their efforts to eliminate waste and losses should encourage Soviet imports of agricultural handling and processing equipment, refrigeration equipment, and other products related to their farm sector. Indeed, under less troubled circumstances, USDA's chief concerns would focus on the Soviets' ability to pay for needed imports, rather than the possibility of future disruption. (Angel O. Byrne, Anton F. Malish)

CAPITAL INVESTMENT AND POLICY DEVELOPMENTS

One of the noteworthy features of Soviet agriculture remains its generally undercapitalized nature. Data recently published in *Razvitie Proizvoditel'nykh Sil Sel'skogo, Khozyaistva* (*The Development of Productive Forces in Agriculture*), for example, shows the value of fixed assets per Soviet farmer at 6,200 rubles (about

\$8,600 at official exchange rates) while fixed assets per industrial worker were put at 11,100 rubles (\$15,400). Although comparisons with the USSR cannot be made with precision, U.S. data would show the value of fixed capital per farm employee at \$36,600, contrasted with \$23,300 per worker in manufacturing. Whether or not

the amounts are precise, it is striking that a Soviet farmer has at his disposal only about half the plant and equipment of an industrial worker, while in the United States a farmer has nearly 60 percent more.

Major Capital Outlays

Capital investment in the Soviet agricultural sector in 1981 totaled 37 billion rubles, 3 percent above 1980 but 0.8 percent below plan. Capital investment in agriculture accounted for 27 percent of investment in the national economy, a proportion held about constant in the Tenth 5-Year Plan, and likely to remain constant during the Eleventh 5-Year Plan as well.

The bulk of agricultural investment, 31 billion rubles, went for restoration and construction of new productive facilities, machinery acquisition, water resources, and electrification. A smaller portion, about 16 percent, went for "nonproductive facilities," most likely rural housing and cultural or service facilities, although other uses might be included. Of the "productive" investment, machinery acquisition is the largest single recipient. Over 4 billion rubles, however, was allocated for the construction and restoration of livestock production facilities. In 1981, these investments reportedly resulted in additional shelters to house 9.3 million head of livestock and 12 million head of poultry, a smaller incremental increase than a year earlier. Capacity for broiler production continued to accelerate; up by 100 million birds, it was 3 percent above 1980.

In the new 5-year period, investment in agriculture, at 190 billion rubles, is slightly less than the amount discussed in the draft plan. Special emphasis is to be placed on construction of facilities for the preservation of fertilizers and equipment, the construction of rural roads (the length of hard surface roads is to increase by 1.4 times), and village renovation. These investments in rural infrastructure are directed toward a sector long neglected. For example, in 1980 in rural areas of the RSFSR, only 38 percent of all households had water supply hook-ups and even fewer had sewer connections.

Irrigation and Drainage

In 1981, 660,000 hectares of newly irrigated lands were brought into production, 6 percent less than the previous year and 40,000 hectares short of plan. Drainage was carried out on 700,000 hectares, 7 percent above a year earlier but 100,000 hectares below plan. Water was supplied to 4 million hectares of meadows and pastures, 15 percent below 1980 and 1.6 million hectares below plan. Total irrigated area in 1980 amounted to 17.5 million hectares; drained lands reached 16.9 million hectares.

In 1982, 9.9 million rubles are to be allocated for land improvement and other reclamation projects. Plans call for 700,000 hectares of newly irrigated land to be brought into production and an additional 800,000 hectares to be drained. A total of 5.4 million hectares of meadows and pastures will be supplied with water. Investments in land reclamation in 1981-85 are planned at 40.4 billion rubles, only 1 percent above the 1976-80 period.

Accessible water resources and their rational use continue to be difficult problems for Soviet agriculture, which already uses about 60 percent of total water resources available. The largest share of available water

resources goes into irrigation. However, because the Soviets rely much on open systems in arid climates, losses from evaporation and filtration are high, and in main canals 25-40 percent of the water never reaches crops. Thus, while the USSR records average annual irrigated water utilization at 13,000 cubic meters per hectare of land—an amount 2-3 times higher than used in the European countries, and 1.5-2 times higher than used in the United States and the Asian countries—it is not effectively utilized. The open irrigation systems contribute to the increased salinization of soils, inhibit the use of cultivating machinery, raise labor requirements, and reduce the effectiveness of applied fertilizer.

All cotton and rice are produced on irrigated land. In 1980, 6 percent of total grain was produced on irrigated land, 30 percent of corn-for-grain, and over 47 percent of vegetables. Coarse and succulent feed were produced on one-fifth of reclaimed (both irrigated and drained) land. Crop yields on irrigated soils have now reached 33 centners per hectare, compared to an overall average of 14.8 centners per hectare.

Until the mid-1970's, the Soviet Government accelerated agricultural development in the Black Soil Zone. However, the relatively poor condition of its soil (as a result of erosion and salinization), plant diseases, and considerable weed and insect infestation forced the Government to divert more attention and effort into agriculture in the Non-Black Soil Zone. During 1981-85, the Soviets plan to irrigate and drain about 1.8 million hectares of land in the Non-Black Soil Zone, to reclaim over 2 million hectares, and to lime 18.4 million hectares. Land reclamation investments in the Non-Black Soil Zone will be increased by 46 percent compared to the 1976-80 period. Nevertheless, the long-range soil reclamation program for the Non-Black Soil Zone will prove to be difficult because of encumbering forests, brushland, and swamps, and the diversity of soil types. Institutionally, the poorly developed infrastructure, shortages of farm labor, inadequately maintained irrigation and drainage systems, and shortages of specialized machinery mean that agricultural production in the zone will grow slowly.

Salinization of soils continues to be a major problem in the arid regions of the European USSR and Soviet Central Asia. Salinated lands occupy over 100 million hectares, especially in arid and semidesert zones, reducing these areas to meadows fit for livestock raising and little else. In the southern part of the Black Soil Zone, in South Kazakhstan, and in Soviet Central Asia, the problem of salinization of soils is a long-term one. Irrigation water in Soviet Central Asia and Kazakhstan tends to be brackish, leaving salt deposits on the surface. Other subtropical and semidesert areas—adjacent to the Black, Azov, Aral, and Caspian Seas—are mainly lowlands with poor drainage potential. Because of these problems, large tracts require application of gypsum and sulphuric acid for leaching. However, Soviet industry is severely deficient in producing sulphuric acid and has major difficulties in the distribution of gypsum.

Farm Machinery

Deliveries of tractors to the agricultural sector reached 352,000 units in 1981, up 1 percent from the previous year (table 18). Truck deliveries, at 268,000, were the same as a year earlier, but grain combines, at 105,000, were 10 percent lower than the 1980 record. As of Janu-

ary 1, 1981, total truck inventories in the agricultural sector reached 1.6 million units. Tractor inventories amounted to 2.6 million, and grain combines totaled 722,000.

The quality of Soviet farm machinery continued to be a major problem. In the Soviet labor newspaper *Trud* (February 3, 1981), academician A. Tselikov noted: "A great number of our motor vehicles are 15 to 25 percent heavier than the same vehicles abroad...the motor resource is two times less, and productivity lower by 20 percent." An article in *Vosprosy Ekonomiki* (*Problems of Economics*), June 1981, noted that new machines do not enter series production for long periods after the prototype testing is completed, and that they are often obsolete by the time they are mass-produced.

Once in the fields, Soviet machinery is not very reliable. The Soviet press complains about inadequate spare parts idling motor vehicles just when they should be most fully utilized. During the first 6 months of 1981, reportedly over 1.5 million spare parts for agricultural equipment were rejected, and the delivery of spare parts fell short of plan. The spare parts problem—a major unknown in its year-to-year effect on Soviet output—is compounded by a lack of repair shops and a shortage of mechanics.

Pravda (January 7, 1982), in an article by I. Totskiy, was especially critical of the Ministry of Tractor and Agricultural Machine Building for failing to provide adequate sets of implements for high-powered tractors. The Tselinograd production association was given an example. It was to develop 11 machines for antierosion work. It had developed two. Soviet private-plot farming relies almost entirely on handtools. According to *Ekonomicheskaya Gazeta* (*Economics Gazette*), September 7, 1981, about 330 varieties of small-scale implements were needed for fruit and vegetable growing, but only 140 types were being manufactured.

Total energy power of Soviet agricultural equipment increased during 1970-80 by 287 million horsepower, and reached 609 million horsepower in 1980. In 1985, it is planned to reach 900 million, compared to total agricultural demand of 1,250-1,300 million horsepower. Finally, Soviet agriculture remains inadequate in its electrification. One source stated: "...it must be admitted that it is abnormal when agriculture uses only 5 percent of producible electric energy."¹⁹

Storage Capacity

Soviet Government purchases of agricultural products from farms amount to about 235-290 million tons annually, at a cost of over 70 billion rubles.²⁰ However, the storage of agricultural products continues to be ineffective and inadequate, despite a large increase in elevators and grain warehouses in recent years. During the past 15 years, grain storage capacity has almost doubled, with construction of 476 new elevators.²¹

Improvement of storage capacity will continue to receive high priority in 1981-85. In May 1981, G. Zolotukhin, the Minister of Procurements, indicated the Soviet Union needed about 200 new grain storage units. These would be built first of all in the main grain-producing areas and at major sea and river ports.²² He also pointed out that present-day grain storage houses and grain dryers and cleaners were outmoded and not used regularly. Reportedly, in 1980, grain drying capacity could handle 70 million tons of grain per month.²³

Potato and vegetable losses reportedly amount to 15-20 percent of annual gross output. Soviet planners estimate that it would be more profitable to store 70 percent of harvested potatoes, vegetables, and fruit where they are produced, and 30 percent where they are consumed. They call for building new storage capacity mainly at the farm level to obviate the need for bulk transportation during the harvest period, and to allow farms and procurement centers more time to sort out substandard produce. At present, clinging soil reportedly amounts to 20-30 percent of the bulk being transported.

Agricultural Chemicals

Mineral fertilizer production (nutrient-weight basis) showed some improvement in 1981 over a year earlier. Output reached 26 million tons, up by 5 percent. Mineral fertilizer deliveries to agriculture, at 19.2 million tons (nutrient-weight basis), rose 406,000 tons above 1980, but nevertheless were below plan. Feed additive deliveries (urea and feed phosphates) totaled 617,000 tons, up 99,000 tons above 1980 (tables 19 and 20).

Application of mineral fertilizer to selected crops, and percentage of the crop fertilized, USSR

Year	Grain excluding corn	Corn for grain	Cotton	Sugar- beets	Potatoes
<i>Kilograms per hectare</i>					
Rate					
1974	40	124	367	299	229
1975	42	155	391	399	280
1976	47	145	393	459	254
1977	48	135	395	469	274
1978	51	180	433	483	287
1979	49	192	410	451	274
1980	51	215	417	438	274
<i>Percent</i>					
Share fertilized					
1974	48	94	98	98	91
1975	48	94	99.5	99.4	93
1976	50	92	99.5	99.5	94
1977	52	89	99.4	99.5	94
1978	54	94	99.6	99.4	94
1979	53	94	97	99	93
1980	57	95	94	99	93

Source: *Vestnik Statistiki*, various issues.

¹⁹*Intensifikatsiya Selskokhozyaistvennogo Proizvodstva Na Sovremennom Etape* (*Intensification of Current Agricultural Production*), 1980, p. 10.

²⁰*Problemy Mechanizatsii, Kooperatsii, and Agro-promyshlennoi Integratsii* (*Problems of Mechanization, Cooperation, and Agro-industrial Integration*), 1980, p. 10.

²¹*Zernovoe Khozyaistvo* (*Grain Production*) 6, 1981, p. 4.

²²Tass, Moscow, May 29, 1981.

²³*Mukomolno-elevatornaya i Kombikormovaya Promyshlennost* (*Milling, Elevator, and Combined Feed Industry*), No. 5, 1981, pp. 1-2.

The average fertilizer use per hectare of cropland in the USSR increased from 12 kilograms in 1960 to 84 kilograms in 1980. Of the latter, grains (excluding corn) received only 51 kilograms, and only 57 percent of the grain area was fertilized. Cotton, sugar beets, and potatoes were fertilized to a far greater extent and in much higher concentrations. However, because of low quality and the lack of specialized application machinery, reportedly only 15-30 percent of the nutrient value of phosphate fertilizers and 40-50 percent of nitrogen fertilizers applied are actually available for plant utilization.

Despite a 7-percent increase in output of chemical protection agents in 1981, current availabilities are still inadequate. One Soviet research institute believes that harvest losses from insect infestations amount to 14 percent of total crop output. An article in *Voprosy Ekonomiki (Problems of Economics)* in June 1981 pointed out that Soviet scientists and the Ministry of Agriculture had recommended output of 144 chemical plant-protection compounds but Soviet industry had produced only 60. The article reported that of these, many were of poor quality and outdated. Recognizing the need for chemical plant-protection agents, the Soviets plan to raise output during 1981-85 by 39 percent and to increase deliveries to agriculture in 1985 to 650,000-680,000 tons. By 1985, it is planned to raise the number of chemical plant protection compounds from 60 to 95—still well below the recommended 144.

Finally, an awareness of the ecological dangers from the use of certain plant-protection chemicals has resulted in a slowdown in their production. For example, A. Petrishchev,²⁴ the Minister of the Fertilizer Industry, stated in January 1982 that because of the environmental damage resulting from the use of stable chlorine pesticides, production of these agents had been reduced.

Soviet Agricultural Policy

Soviet pronouncements on agricultural policy in 1981 by and large followed themes already identified.²⁵ Significant attention continues to be directed to the "Food Program," set out by General Secretary Brezhnev in October 1980 as the centerpiece of Soviet agricultural policy. The main thrust of this program is to create an integrated agro-industrial complex to coordinate the planning, financing, and management of agriculture, the industries serving it, and downstream facilities. Because such a vertically integrated approach cuts across the existing functions of numerous Government and Party organizations, most of the work on the Food Program so far has involved studies of the best methods to overhaul agricultural planning.

Soviet press articles suggest a major internal debate is taking place as to whether a new Soviet state committee (or super ministry) should be established to create and administer the Food Program, whether GOSPLAN (i.e., the State Planning Commission) or the Ministry of Agriculture should have the major role, or whether the focus should be at lower organizational levels, such as "inter-departmental coordinating councils" which would regulate all economic activity in a given district or subdistrict. General Secretary Brezhnev's speech at the November 1981 Plenum gave little indication of how the debate might end, other than to show his continued support for increasing the scope of initiative at the kolkhoz and sovkhoz level. Rather than elaborating on the Food Program, he simply stated that it will be discussed "at one of the next" Central Committee Plenums.

During 1981, the Soviets increased purchase prices for key agricultural commodities. The bonus payments formerly paid for above-plan sales became an integral part of the state procurement price. Farms were to be paid 26 percent more for corn, 25-26 percent more for peas, 50 percent more for fodder vetch, and 33 percent more for millet and rye. Other price increases were put into effect for soybeans, cotton, and milk. Certain republics increased prices for livestock, potatoes, sugar beets, and some vegetables. With the new basic prices in effect, a 50-percent bonus is to be paid to farms and other agricultural enterprises whose sales exceed the average annual level achieved in the Tenth 5-Year Plan. According to *Ekonomicheskaya Gazeta*, April 20, 1981, the 50-percent bonus for output in excess of previous sales (instead of in excess of the procurement plan) is directed at eliminating payments to farms which do not increase production, but nevertheless meet their (too low) targets.

While increasing procurement prices, the Soviets maintained retail prices. The reluctance to increase retail prices on prime necessities results in growing retail price subsidies. In 1980, these subsidies (at official exchange rates) were estimated at \$46 billion. Some observers attribute the campaign to conserve bread as necessary propaganda before increasing the price of that commodity; despite poor harvests, the price of bread has been the same for a quarter-century. (Yuri Markish)

²⁴ *Khimiya v Selskom Khozyaistve (Chemistry in Agriculture)*, No. 1, 1982, p. 5.

²⁵ *Agricultural Situation: USSR Review of 1980 and Outlook for 1981*, Supplement 1 to WAS-24.

Table 1—Area, yield, and production of grain, USSR, 5-year averages, and 1971-81 annual

Year	Wheat			Rye	Barley	Oats	Corn	Other ¹	Total grain
	Winter	Spring	Total						
1,000 hectares									
Area:									
1966-70 average	18,280	48,894	67,174	11,505	20,331	8,680	3,517	10,876	122,083
1971	20,694	43,341	64,035	9,507	21,566	9,632	3,332	9,865	117,937
1972	14,979	43,513	58,492	8,160	27,269	11,358	4,012	10,867	120,158
1973	18,340	44,815	63,155	7,012	29,387	11,887	4,031	11,266	126,738
1974	18,610	41,066	59,676	9,810	31,079	11,567	3,955	11,100	127,187
1975	19,593	42,392	61,985	8,010	32,547	12,107	2,652	10,619	127,921
Average	18,443	43,025	61,469	8,500	28,370	11,310	3,596	10,743	123,988
1976	17,248	42,219	59,467	9,035	34,261	11,269	3,303	10,425	127,760
1977	20,712	41,318	62,030	6,697	34,514	13,026	3,362	10,715	130,344
1978	23,122	39,776	62,898	7,719	32,690	12,097	2,535	10,526	128,465
1979	18,718	38,964	57,682	6,476	37,005	12,239	2,667	10,282	126,351
1980	22,553	38,922	61,475	8,645	31,583	11,770	2,977	10,158	126,608
Average	20,470	40,240	60,710	7,714	34,011	12,080	2,969	10,421	127,906
1981	20,305	38,927	59,232	7,551	31,781	12,470	3,545	10,980	125,559
Metric tons per hectare									
Yield: ²									
1966-70 average	1.96	1.11	1.34	1.12	1.50	1.38	2.72	1.18	1.37
1971	2.31	1.18	1.54	1.35	1.60	1.52	2.58	1.20	1.54
1972	1.96	1.30	1.47	1.18	1.35	1.24	2.44	1.09	1.40
1973	2.70	1.35	1.74	1.53	1.87	1.47	3.28	1.44	1.76
1974	2.40	.95	1.40	1.55	1.74	1.32	3.05	1.35	1.54
1975	1.87	.70	1.07	1.13	1.10	1.03	2.74	.87	1.09
Average	2.26	1.10	1.45	1.36	1.53	1.31	2.82	1.19	1.47
1976	2.59	1.24	1.63	1.55	2.03	1.61	3.06	1.45	1.75
1977	2.51	.97	1.49	1.27	1.53	1.41	3.25	1.21	1.50
1978	2.98	1.31	1.92	1.76	1.90	1.54	3.50	1.26	1.85
1979	2.05	1.33	1.56	1.26	1.30	1.24	3.13	.91	1.42
1980	2.21	1.24	1.60	1.18	1.38	1.32	3.17	1.21	1.49
Average	2.47	1.22	1.64	1.40	1.63	1.42	3.22	1.21	1.60
1981	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,000 metric tons									
Production:									
1966-70 average	35,888	54,304	90,192	12,834	30,454	11,938	9,558	12,785	167,562
1971	47,787	50,973	98,760	12,787	34,571	14,650	8,597	11,810	181,175
1972	29,380	56,613	85,993	9,633	36,813	14,095	9,830	11,874	168,238
1973	49,435	60,349	109,784	10,759	55,044	17,516	13,216	16,211	222,530
1974	44,698	39,215	83,913	15,223	54,208	15,302	12,104	14,958	195,708
1975	36,651	29,573	66,224	9,064	35,808	12,495	7,328	9,199	140,118
Average	41,590	47,345	88,935	11,493	43,289	14,812	10,215	12,810	181,554
1976	44,594	52,288	96,882	13,991	69,539	18,113	10,138	15,092	223,755
1977	51,971	40,190	92,161	8,480	52,687	18,407	10,979	13,013	195,727
1978	68,829	52,107	120,936	13,612	62,118	18,578	8,898	13,248	237,390
1979	38,417	51,790	90,207	8,113	47,954	15,162	8,373	9,367	179,176
1980	49,816	48,366	98,182	10,205	43,450	15,544	9,454	12,250	189,090
Average	50,725	48,942	99,674	10,880	55,149	17,160	9,568	12,594	205,028
1981	NA	NA	NA	NA	NA	NA	NA	NA	NA

¹Includes millet, buckwheat, rice, pulses, and miscellaneous grains. ²Calculated from area and production data when official yield data are not available.

Table 2—Total supply and estimated utilization of grain, USSR, 1971/72-1981/82¹

Year beginning July 1	Pro- duction ²	Trade			Avail- ability	Utilization						Stock change ^{3 4}
		Imports	Exports	Net ³		Seed	Indus- trial	Food	Dockage- waste	Feed	Total	
Million metric tons												
Total grains and pulses												
1971/72	181.2	8.3	6.9	+1.4	183	27	3	45	13	93	181	+2
1972/73	168.2	22.8	1.8	+21.0	189	26	3	45	15	98	187	+2
1973/74	222.5	11.3	6.1	+5.2	228	27	3	45	33	105	214	+14
1974/75	195.7	5.7	5.3	+0.4	196	28	3	45	23	107	206	-10
1975/76	140.1	26.1	0.7	+25.4	166	28	3	45	14	89	180	-14
1976/77	223.8	11.0	3.3	+7.7	232	29	3	45	31	112	221	+11
1977/78	195.7	18.9	2.3	+16.8	213	28	4	45	29	122	228	-16
1978/79	237.4	15.6	2.8	+12.8	250	28	4	46	28	125	231	+19
1979/80	179.2	31.0	0.8	+29.7	209	28	4	46	22	123	222	-13
1980/81 ⁵	189.2	34.8	0.5	+34.3	223	27	4	47	28	122	228	-5
1981/82 ⁶	175.0	43.0	1.0	+42.0	217	28	4	47	18	121	217	0
Wheat												
1971/72	98.8	3.5	5.8	-2.3	97	15	1	35	7	36	94	+3
1972/73	86.0	15.6	1.3	+14.3	100	14	1	35	8	41	98	+2
1973/74	109.8	4.5	5.0	-0.5	109	14	1	34	16	30	96	+13
1974/75	83.9	2.5	4.0	-1.5	82	14	1	34	10	34	93	-11
1975/76	66.2	10.1	0.5	+9.6	76	15	1	35	7	30	87	-11
1976/77	96.9	4.6	1.0	+3.6	100	15	1	35	14	28	92	+8
1977/78	92.2	6.6	1.0	+5.6	98	15	1	35	14	44	108	-10
1978/79	120.8	5.1	1.5	+3.6	125	14	1	35	14	43	107	+18
1979/80	90.2	12.0	0.5	+11.4	102	15	1	35	11	53	115	-13
1980/81 ⁵	98.1	16.0	0.5	+13.0	114	15	1	36	15	50	117	-3
1981/82 ⁶	88.0	19.0	0.8	+18.1	106	15	1	36	9	45	106	0
Coarse grains ⁷												
1971/72	72.6	4.3	0.9	+3.4	76	10	2	7	5	51	76	0
1972/73	72.5	6.9	0.4	+6.5	79	11	2	7	7	53	79	0
1973/74	101.0	6.4	0.9	+5.5	106	11	2	7	15	70	105	+1
1974/75	99.7	2.7	1.0	+1.7	101	11	2	7	12	68	100	+1
1975/76	65.8	15.6	0	+15.6	81	12	2	7	7	56	84	-3
1976/77	115.0	5.7	2.0	+3.7	119	12	3	7	16	78	116	+3
1977/78	92.6	11.7	1.0	+10.7	103	11	3	7	14	74	109	-5
1978/79	105.0	10.0	1.0	+9.0	114	12	3	7	13	79	113	+1
1979/80	81.0	18.4	0	+18.6	100	12	3	7	10	68	100	-0
1980/81 ⁵	81.0	18.0	0	+18.0	99	11	3	7	12	68	101	-2
1981/82 ⁶	77.0	23.0	0	+23.0	100	12	3	7	8	70	100	0

¹Rounded to the nearest million tons, except for production and trade data. Thus, totals may not add due to rounding. ²Calendar year basis. ³Minus indicates net exports or drawdown of stocks. ⁴Difference between availability and estimated total utilization. ⁵Preliminary. ⁶USDA end-of-season forecast. ⁷Includes rye, barley, oats, corn, and millet.

Table 3—January 1 livestock numbers and animal units in terms of cows, USSR, 1955, 1960-82

Year	Cattle		Hogs	Sheep	Goats	Horses	Poultry	Total animal units ²
	Total	Cows ¹						
Million head								
1955	56.7	26.4	31.0	99.0	14.0	14.1	³ 375.0	³ 86.8
1960	74.2	33.9	53.4	136.1	7.9	11.0	514.3	109.8
1961	75.8	34.8	58.7	133.0	7.3	9.9	515.6	111.3
1962	82.1	36.3	66.7	137.5	7.0	9.4	542.6	118.5
1963	87.0	38.0	70.0	139.7	6.7	9.1	550.4	123.1
1964	85.4	38.3	40.9	133.9	5.7	8.5	449.1	110.2
1965	87.1	38.8	52.8	125.2	5.4	7.9	456.2	113.7
1966	93.4	39.3	59.6	129.8	5.5	8.0	490.7	121.0
1967	97.1	40.2	58.0	135.5	5.5	8.0	516.3	124.2
1968	97.2	40.4	50.9	138.4	5.5	8.0	528.4	122.7
1969	95.7	40.1	49.0	140.6	5.6	8.0	546.9	121.7
1970	95.2	39.4	56.1	130.7	5.1	7.5	590.3	122.6
1971	99.2	39.8	67.5	138.0	5.4	7.4	652.7	130.5
1972	102.4	40.0	71.4	139.9	5.4	7.3	686.5	134.4
1973	104.0	40.6	66.6	139.1	5.6	7.1	700.0	134.1
1974	106.3	41.4	70.0	142.6	5.9	6.8	747.7	138.0
1975	109.1	41.9	72.3	145.3	5.9	6.8	792.4	141.6
1976	111.0	41.9	57.9	141.4	5.7	6.4	734.4	136.5
1977	110.3	42.0	63.1	139.8	5.5	6.0	796.0	138.4
1978	112.7	42.6	70.5	141.0	5.6	5.8	882.3	143.9
1979	114.1	43.0	73.5	142.6	5.5	5.7	916.9	147.0
1980	115.1	43.3	73.9	143.6	5.8	5.6	980.9	148.7
1981	115.1	43.4	73.4	141.6	5.9	5.6	1,029	149.4
1982	⁴ 115.7	⁴ 43.6	⁴ 73.2	³ 142.0	³ 6.0	³ 5.6	³ 1,050	³ 150.2

NA = Not available.

¹Revised series beginning 1966; excludes cows placed on feed for slaughter. ²In terms of cows. Conversion ratios as follows: Cattle (other than cows) .6; hogs .3; total sheep and goats .1; horses 1.0; and poultry .02. ³Estimate. ⁴Preliminary.

Table 4—USSR livestock and poultry numbers on state and collective farms by first of month, 1975-82

Year and category	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
<i>Million head</i>												
Cattle												
1975	80.9	81.0	82.2	83.9	86.0	87.0	86.5	86.6	85.8	84.6	83.9	83.4
1976	83.8	82.9	83.7	85.3	87.1	89.8	89.2	87.6	86.7	85.0	84.2	83.5
1977	83.4	85.0	86.0	87.6	89.7	90.6	90.2	89.8	88.9	87.1	86.3	86.2
1978	86.6	86.8	88.1	89.9	91.7	92.5	91.6	91.6	90.8	89.2	88.6	88.2
1979	88.0	88.2	89.2	91.1	93.0	93.7	92.8	92.3	91.4	90.1	89.3	88.9
1980	89.0	88.9	89.6	91.6	93.4	94.0	93.5	93.1	92.2	90.8	90.0	89.6
1981	NA	89.4	90.0	92.2	94.1	94.8	94.3	93.8	92.7	91.1	90.3	90.1
1982	NA	90.1	90.6									
Cows												
1975	26.9	26.8	26.8	27.0	27.2	27.4	27.5	27.5	27.4	27.3	27.3	27.3
1976	27.4	27.2	27.2	27.4	27.5	27.7	28.2	27.7	27.7	27.6	27.5	27.6
1977	27.8	28.1	28.1	28.3	28.5	28.7	28.8	28.8	28.7	28.7	28.6	28.7
1978	28.9	28.8	28.8	29.0	29.2	29.3	29.3	29.3	29.3	29.2	29.1	29.2
1979	29.4	29.3	29.2	29.4	29.6	29.7	29.7	29.6	29.6	29.5	29.4	29.4
1980	29.8	29.5	29.5	29.6	29.7	29.8	29.9	29.9	29.8	29.7	29.6	29.6
1981	NA	29.6	29.6	29.7	29.8	29.9	30.0	29.9	29.8	29.8	29.7	29.7
1982	NA	29.7	29.7									
Hogs												
1975	53.6	53.5	53.2	52.3	53.6	55.2	55.6	56.8	54.3	49.6	46.4	43.9
1976	41.9	41.2	41.2	41.8	43.8	45.6	47.4	48.3	49.2	49.3	48.8	47.7
1977	47.3	48.6	49.1	49.1	50.2	51.4	52.8	54.7	55.5	54.9	54.2	53.4
1978	52.4	53.0	53.6	53.7	54.6	55.9	56.4	58.3	59.0	58.4	57.7	56.5
1979	54.9	55.0	55.1	54.9	55.6	56.6	57.0	58.2	58.5	58.5	57.5	56.0
1980	55.2	54.9	54.3	54.4	55.0	55.6	56.0	58.0	58.2	58.2	57.7	56.6
1981	NA	55.4	55.2	55.2	55.6	56.3	56.9	58.3	58.6	58.6	58.4	56.2
1982	NA	54.8	54.6									
Poultry												
1975	401.8	404.9	444.3	498.8	547.4	577.2	573.3	547.3	483.5	418.8	376.2	361.8
1976	396.6	368.6	395.9	433.4	476.3	504.0	509.6	500.9	481.6	459.3	444.4	434.9
1977	437.7	442.9	470.1	513.2	564.6	598.0	597.0	594.9	572.5	540.5	518.5	503.9
1978	497.3	496.5	528.8	575.2	625.9	650.1	644.6	644.3	623.3	595.1	573.1	555.0
1979	549.7	543.9	568.1	617.5	671.5	695.7	685.8	685.5	666.6	635.3	616.1	593.4
1980	592.0	586.0	606.0	642.8	688.0	708.9	704.0	707.6	697.8	675.0	655.5	634.8
1981	NA	624.1	651.3	689.7	730.6	741.8	735.7	733.7	720.9	691.3	674.2	659.2
1982	NA	651.0	669.8									
Sheep and goats												
1975	116.8	119.6	125.3	136.1	149.6	151.7	146.8	142.2	135.4	127.4	120.7	116.5
1976	115.4	117.7	122.5	131.9	143.1	144.4	141.6	136.8	131.0	122.7	117.8	115.2
1977	114.4	117.8	124.3	135.1	147.2	149.2	144.4	140.6	133.6	124.6	119.1	116.4
1978	115.6	118.8	125.8	137.2	149.4	150.2	145.5	142.4	136.2	127.1	121.2	118.2
1979	116.6	120.0	126.2	139.7	151.0	150.9	146.3	142.3	136.0	127.3	121.6	118.6
1980	117.4	119.8	126.5	137.8	148.4	148.8	143.9	140.2	133.8	125.3	119.5	116.7
1981	NA	117.7	124.4	135.9	148.2	148.5	143.9	140.0	133.6	124.9	119.6	116.6
1982	NA	117.8	124.0									

NA = Not available.

Table 5—Production of principal livestock products, USSR, 5-year averages, and 1966-81 annual

Year	Meat						Milk	Wool ²	Eggs
	Total	Beef and veal	Pork ¹	Mutton lamb, and goat	Poultry	Other			
				1,000 metric tons					Millions
1966	10,704	4,377	4,465	933	745	184	75,992	371	31,672
1967	11,515	5,081	4,456	1,028	764	186	79,920	394	33,921
1968	11,648	5,513	4,079	1,029	817	210	82,295	415	35,679
1969	11,770	5,569	4,094	969	866	272	81,540	390	37,190
1970	12,278	5,393	4,543	1,002	1,071	269	83,016	419	40,740
Average	11,583	5,187	4,327	992	853	224	80,553	398	35,840
1971	13,272	5,536	5,277	996	1,183	280	83,183	429	45,100
1972	13,633	5,722	5,445	923	1,237	306	83,181	420	47,910
1973	13,527	5,873	5,081	954	1,295	324	88,300	433	51,154
1974	14,620	6,384	5,515	974	1,420	327	91,760	462	55,509
1975	14,968	6,409	5,651	1,014	1,539	355	90,804	467	57,463
Average	14,004	5,985	5,394	972	1,335	318	87,446	442	51,427
1976	13,583	6,615	4,343	885	1,411	329	89,675	436	56,187
1977	14,722	6,888	4,950	894	1,691	299	94,929	459	61,194
1978	15,501	7,086	5,302	921	1,902	290	94,677	467	64,517
1979	15,341	6,903	5,268	863	2,034	273	93,341	472	65,585
1980	14,981	6,873	5,092	844	2,103	269	90,630	461	67,828
Average	14,826	6,833	5,860	881	1,828	292	92,650	459	63,062
1981 ³	15,200	⁴ 6,700	⁴ 5,200	⁴ 800	⁴ 2,300	⁴ 200	88,500	⁴ 474	70,900

¹Including fat. ²Greasy basis. ³Preliminary. ⁴Estimate.

Table 6—Government procurements of livestock products, USSR, 5-year averages, and 1971-81 annual

Year	Total meat ¹		Milk and milk products	Eggs	Wool ²
	Live weight	Carcass weight			
				Millions	1,000 metric tons
1961-65 average	8,554	5,246	31,232	8,665	369
1966-70 average	11,610	7,318	43,197	14,404	412
1971	14,163	9,203	47,078	21,570	457
1972	15,023	9,712	48,443	24,299	452
1973	14,695	9,471	52,978	27,544	470
1974	16,187	10,474	55,768	30,892	507
1975	16,765	10,861	56,296	33,065	511
Average	15,367	9,944	52,113	27,474	479
1976	15,108	9,307	56,220	32,897	481
1977	16,286	10,186	60,762	36,831	512
1978	17,034	10,588	60,368	39,288	528
1979	16,692	10,430	58,954	41,050	538
1980	15,865	9,913	57,241	43,063	526
Average	16,197	10,085	58,709	38,626	517
1981	16,100	10,100	55,600	45,200	NA

NA = Not available.

¹Livestock and poultry. ²Greasy basis.

Table 7—Trade in meat and meat products, USSR, 5-year average, and 1971-80 annual

Commodity	1966-70 Average	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
<i>1,000 metric tons</i>											
Imports											
Total meat & meat products	98	225	131	129	515	515	362	617	184	611	821
Fresh, frozen meat	74	203	85	89	472	454	284	559	136	527	736
Red meat	43	116	40	46	396	406	226	438	84	386	577
Poultry meat	31	87	45	43	76	48	58	121	52	141	159
Canned meat ¹	23	29	77	77	75	60	61	75	62	150	129
Canned meat with vegetables ¹	31	23	42	25	25	59	117	71	47	49	67
Other	0	4	5	6	10	18	13	7	10	17	19
Exports											
Total meat & meat products	115	34.8	60.2	75.0	55.9	44.3	40.9	32.8	38.6	33.5	35.1
Fresh, frozen meat	97	10.9	37.0	47.2	27.4	17.6	7.9	7.7	9.5	5.9	8.1
Red meat	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Poultry meat	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Canned meat ¹	15	62.4	56.4	64.3	64.8	57.5	74.7	62.8	70.3	68.0	69.9
Canned meat with vegetables ¹	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other	0	5	6	8	9	8	10	5	7	7	5

NA = Not available.

¹Millions of cans.Source: *Vneshnyaya Torgovlya v SSSR*, various issues.

Table 8—Area, yield, and production of selected nongrain crops, USSR, 5-year averages, and 1971-81 annual

Year	Seed-cotton	Sugar-beets	Sun-flowers	Fiber flax	Potatoes	Vegetables	Fruit berries grapes ¹	Tobacco ²
<i>1,000 hectares</i>								
Area:								
1966-70 average	2,527	3,582	4,837	1,341	8,238	1,440	2,625	144
1971	2,770	3,321	4,498	1,244	7,894	1,519	3,272	160
1972	2,735	3,486	4,394	1,251	7,960	1,578	3,264	169
1973	2,742	3,553	4,745	1,248	8,017	1,621	3,268	168
1974	2,880	3,610	4,686	1,210	7,983	1,635	3,339	172
1975	2,924	3,666	4,045	1,215	7,912	1,652	3,379	173
Average	2,810	3,527	4,474	1,234	7,953	1,601	3,304	168
1976	2,949	3,754	4,534	1,214	7,087	1,562	3,356	183
1977	2,992	3,761	4,574	1,209	7,067	1,567	3,370	182
1978	3,038	3,763	4,558	1,197	7,042	1,646	3,345	165
1979	3,090	3,739	4,334	1,046	6,966	1,654	3,326	170
1980	3,147	3,710	4,353	1,116	6,936	1,715	NA	169
Average	3,043	3,745	4,471	1,156	7,020	1,629	NA	174
1981 ³	3,168	3,633	4,235	946	6,854	1,703	NA	167
<i>Metric tons per hectare</i>								
Yield:								
1966-70 average	2.41	22.8	1.32	.34	11.5	13.2	3.7	1.44
1971	2.56	21.9	1.26	.39	11.7	13.2	3.8	1.44
1972	2.67	22.3	1.14	.36	9.8	12.2	2.9	1.64
1973	2.80	24.7	1.55	.35	13.5	15.5	4.1	1.64
1974	2.92	21.6	1.44	.33	10.1	14.1	3.7	1.70
1975	2.69	18.1	1.23	.41	11.2	13.5	4.2	1.67
Average	2.73	21.7	1.32	.37	11.3	13.7	3.8	1.62
1976	2.81	26.6	1.16	.42	12.0	15.2	4.5	1.66
1977	2.93	24.8	1.28	.40	11.8	14.6	4.5	1.66
1978	2.80	24.8	1.17	.31	12.2	16.1	4.3	1.66
1979	2.96	20.4	1.24	.30	13.0	15.6	4.9	1.74
1980	3.17	21.4	1.07	.27	9.6	14.7	NA	1.66
Average	2.93	23.6	1.19	.34	11.8	15.2	NA	1.67
1981 ³	3.03	16.7	1.09	NA	10.5	15.0	NA	NA
<i>1,000 metric tons</i>								
Production:								
1966-70 average	6,099	81,118	6,389	458	94,813	19,472	9,710	207
1971	7,101	72,185	5,663	486	92,655	20,840	12,370	232
1972	7,296	76,424	5,048	456	78,329	19,941	9,570	277
1973	7,664	87,047	7,385	443	108,200	25,927	13,351	275
1974	8,409	77,948	6,784	402	81,022	24,811	12,441	293
1975	7,864	66,314	4,990	493	88,703	23,351	14,235	290
Average	7,667	75,984	5,974	456	89,782	22,974	12,393	273
1976	8,278	99,872	5,277	509	85,102	24,991	15,260	303
1977	8,758	93,099	5,904	480	83,652	24,149	15,275	302
1978	8,500	93,488	5,333	376	86,124	27,902	14,374	274
1979	9,161	76,214	5,414	314	90,956	27,215	16,303	296
1980	9,961	79,599	4,650	296	67,023	25,373	14,644	284
Average	8,932	88,466	5,316	395	82,571	25,926	15,171	292
1981 ³	9,600	60,600	4,600	NA	72,000	25,600	NA	NA

NA = Not available. ¹Bearing area. ²Excluding makhorka. ³Preliminary.

Table 9—Government procurements of nongrain crops, USSR, 5-year averages, and 1971-81 annual

Year	Seed cotton	Sugar-beets	Sunflower-seeds	Fiber flax	Potatoes	Vegetables	Fruit, berries, grapes	Tobacco ¹
<i>1,000 metric tons</i>								
1961-65 average	4,996	55,353	3,372	376	8,353	6,736	3,238	135
1966-70 average	6,099	74,426	4,672	421	10,921	9,416	5,431	206
1971	7,101	64,329	4,359	461	11,482	11,467	6,351	230
1972	7,296	68,043	3,753	439	11,087	11,234	5,325	275
1973	7,664	77,799	5,553	421	15,410	14,126	7,793	273
1974	8,409	67,484	5,228	364	11,156	14,657	7,933	292
1975	7,864	61,880	3,841	478	14,527	13,883	8,541	287
Average	7,667	67,907	4,547	433	12,732	13,073	7,189	271
1976	8,278	85,142	3,770	483	13,435	16,022	9,684	299
1977	8,762	84,869	4,447	440	17,122	16,171	9,439	300
1978	8,500	80,161	4,028	332	14,951	18,374	9,268	273
1979	9,161	69,300	4,225	296	16,400	18,010	10,882	294
1980	9,961	64,407	3,357	247	11,099	17,658	10,003	284
Average	8,932	76,775	3,965	360	14,601	17,247	9,855	290
1981	9,600	NA	NA	NA	NA	NA	NA	NA

NA = Not available.

¹Excluding makhorka.**Table 10—USSR sugar production and trade, 5-year averages, and 1971-81 annual**

Year	Industrial production		Imports		Exports refined	
	Total	of which from beets	Raw			Refined
			Total	From Cuba		
1,000 metric tons						
1961-65 Average	8,328	NA	2,153	2,153	121	592
1966-70 Average	10,203	8,638	2,082	2,081	2	1,097
1971	9,025	7,805	1,536	1,536	3	1,002
1972	8,903	7,307	1,658	1,101	248	50
1973	10,714	8,449	2,485	1,603	137	43
1974	9,446	7,848	1,856	1,856	18	95
1975	10,382	7,445	3,236	2,964	4	53
Average	9,694	7,771	2,154	1,812	82	249
1976	9,249	6,162	3,343	3,068	383	73
1977	12,036	8,173	4,287	3,652	458	81
1978	12,209	8,605	3,990	3,797	3	162
1979	10,647	7,293	3,766	3,707	294	226
1980	10,127	6,617	3,839	2,647	1,056	152
Average	10,854	7,367	3,845	3,374	459	139
1981 ¹	9,500	6,000	4,200	3,500	NA	NA

NA = Not available. ¹Estimate.

Source: Narodnoe Khozyaystvo, and Vneshnyaya Torgovlya, various issues.

Table 11 – Production, trade, and available supplies of cotton lint, USSR, crop year 1965/66-1981/82

Year beginning August 1	Procurements of seed cotton	Lint cotton production	Imports ¹	Exports ¹	Net Exports	Supplies available for domestic utilization
<i>1,000 metric tons</i>						
1965/66	5,662	1,917	176	487	310	1,607
1966/67	5,981	2,006	156	523	367	1,639
1967/68	5,970	2,021	140	546	406	1,615
1968/69	5,945	1,952	152	495	343	1,609
1969/70	5,708	1,956	221	490	269	1,687
1970/71	6,890	2,344	249	534	285	2,059
1971/72	7,101	2,347	198	608	410	1,937
1972/73	7,296	2,400	146	697	551	1,849
1973/74	7,664	2,401	136	734	598	1,803
1974/75	8,409	2,660	138	775	637	2,023
1975/76	7,864	2,528	125	846	721	1,807
1976/77	8,278	2,615	104	936	832	1,783
1977/78	8,758	² 2,768	77	906	829	² 1,939
1978/79	8,500	² 2,669	77	818	741	² 1,928
1979/80	9,161	² 2,858	64	821	757	² 2,101
1980/81	9,962	² 3,108	² 50	² 905	² 855	² 2,253
1981/82	9,600	² 2,995	³ 50	³ 850	³ 800	³ 2,195

¹Calendar year data converted to crop year basis. ²Estimate. ³Forecast.

Table 12 – USSR consumption norms of selected food products and per capita consumption, selected years 1950-80

Year	Meat and fat	Fish and fish products	Milk and milk products ¹	Eggs	Sugar	Vegetable oil	Potatoes	Grain ²	Vegetables and melons	Fruits and berries
	<i>Kilograms</i>			<i>Number</i>	<i>Kilograms</i>					
1950	26	7.0	172	60	11.6	2.7	241	172	51	11
1960	40	9.9	240	118	28.0	5.3	143	164	70	22
1970	48	15.4	307	159	38.8	6.8	130	149	82	35
1966-70 average	47	14.3	287	144	37.2	6.5	132	150	78	NA
1971	50	14.8	300	174	39.5	7.0	128	147	85	39
1972	52	15.1	296	185	38.8	7.0	121	145	80	36
1973	53	16.1	307	195	40.8	7.3	122	143	85	41
1974	55	16.5	316	205	41.0	7.9	121	142	87	37
1975	57	16.8	315	216	40.9	7.6	120	141	89	39
Average	53	15.9	307	195	40.2	7.4	122	144	85	38
1976	56	18.4	316	209	41.9	7.7	119	141	86	39
1977	56	17.1	321	222	42.4	8.1	120	139	88	41
1978	57	17.1	318	232	42.8	8.3	117	140	92	41
1979	58	16.3	319	235	42.0	8.4	115	138	98	38
1980	57	17.0	314	238	42.2	8.6	112	139	93	34
Average	57	17.2	318	227	42.3	8.2	117	139	91	39
Consumption norm ³	82	18.6	405	292	40.0	9.1	97	110	146	113
Revised consumption norm ⁴	78	18.2	405	292	40.0	9.1	110	115	130	91

NA = Not available.

¹Including milk equivalent of butter. ²Flour equivalent. ³Kh. S. Baimenov, "Struktura i rost tovaroorobota v Uzbekistane," Uzbekistan, 1977, p. 24.

⁴Planovoe Khozyaistvo, No. 10, 1981, p. 117.

Table 13—USSR agricultural imports, 1974-80, by value

Commodity	1974	1975	1976	1977	1978	1979	1980
<i>Million dollars¹</i>							
Animals for slaughter	112.6	190.0	101.1	115.8	76.5	134.7	152.6
Breeding animals	4.4	7.9	5.9	6.3	7.0	15.9	5.8
Meat and meat products	476.7	495.0	379.7	691.7	257.7	844.3	1,359.3
Milk and milk products	23.5	31.6	33.8	42.2	35.0	50.2	100.0
Egg and egg products	27.2	34.8	29.5	87.6	32.3	42.8	40.6
Grains	706.7	2,673.2	2,968.3	1,371.0	2,416.9	3,425.7	4,890.9
Wheat flour	51.9	92.6	88.0	102.6	66.0	172.5	296.9
Rice	69.4	101.0	102.3	129.6	153.3	216.7	263.8
Vegetables and potatoes	181.1	250.8	274.4	362.7	391.4	446.5	456.7
Fruits and berries, fresh	190.5	245.6	264.0	262.0	300.6	370.1	433.6
Dried fruit	51.5	67.7	48.4	87.6	83.4	131.6	169.6
Processed fruits and berries	57.2	104.9	99.8	112.2	125.3	136.1	185.8
Nuts	107.0	114.7	78.5	146.3	118.1	114.9	195.7
Sugar, raw	806.3	2,184.2	1,936.9	2,352.8	3,129.1	3,116.5	3,334.8
Sugar, refined	9.1	.8	134.7	111.8	1.5	60.6	528.9
Coffee, cocoa, tea	384.1	505.7	455.6	615.2	615.0	739.2	745.8
Spices	21.8	22.4	27.5	31.2	35.9	38.0	33.8
Alcoholic and nonalcoholic drinks	392.3	530.1	505.8	532.5	621.2	717.4	808.3
Tobacco, raw	143.0	226.2	212.0	233.8	224.1	246.5	293.4
Tobacco products	233.0	297.9	314.4	328.7	365.4	403.1	466.0
Furs	6.9	2.0	2.1	2.9	2.8	3.2	4.8
Raw hides	87.3	64.9	55.3	6.6	52.4	39.2	44.1
Oilseeds	38.8	129.3	454.3	390.3	270.8	542.2	368.6
Natural fibers	353.5	289.4	247.5	234.9	112.0	177.8	139.1
Wool	356.0	266.6	304.2	368.1	417.6	484.1	504.9
Animal fats including butter	10.2	12.1	10.5	67.9	47.0	216.5	412.8
Vegetable oils	36.2	54.8	58.3	83.1	83.5	146.4	259.7
Technical fats and oils	29.8	53.8	32.6	47.0	68.6	160.4	191.8
Seed and planting materials	86.9	86.3	105.1	193.1	128.6	120.8	180.3
Total agricultural imports	5,065.1	9,137.6	9,335.1	9,121.3	10,245.2	13,314.1	16,824.8

¹USSR official data converted at \$1.32 in 1974; \$1.34 in 1975; \$1.33 in 1976; \$1.34 in 1977; \$1.46 in 1978; \$1.52 in 1979; \$1.54 in 1980.

Source: Vneshnyaya Torgovlya v SSSR, 1975-80.

Table 14—Principal agricultural imports, USSR, 1974-80

Commodity	1974	1975	1976	1977	1978	1979	1980
<i>1,000 metric tons</i>							
Total							
Grain:	7,131	15,909	20,638	¹ 10,608	¹ 22,376	¹ 24,181	¹ 28,335
Wheat	2,707	9,146	6,686	¹ 6,826	¹ 8,850	¹ 9,650	¹ 14,915
Corn	3,440	5,548	11,376	¹ 4,189	¹ 13,203	¹ 14,518	¹ 10,000
Rice, milled	194	279	324	460	414	613	695
Wheat flour	316	339	380	462	391	792	959
Animals for slaughter:							
Cattle	86	208	70	2	2	2	2
Sheep	46	37	32	2	2	2	2
Horses	15	15	16	2	2	2	2
Meat and meat products	515	515	362	617	184	611	821
Shell eggs ³	736	767	654	691	680	767	737
Fruit:							
Fresh	901	860	871	841	847	907	995
Dried	95	118	101	113	114	109	130
Vegetables:							
Fresh	196	144	186	191	182	147	133
Canned	362	347	324	370	381	422	420
Raw sugar	1,856	3,236	3,343	4,287	3,990	3,766	3,839
Coffee	47	60	44	45	26	40	48
Cocoa beans	143	156	134	73	103	126	127
Tea	49	67	60	60	46	49	71
Tobacco	79	88	74	78	65	66	83
Hides and skins ³	22	22	14	1	3	1	2
Oilseeds	70	424	1,827	1,455	966	1,814	1,155
Crude rubber	315	235	NA	NA	NA	NA	NA
Wool, scoured	100	110	110	112	127	134	124
Cotton lint	140	137	116	94	65	86	49
Vegetable oil, edible	29	61	129	126	167	199	357

NA = Not available.

¹ERS estimates, official USSR sources report only value. ²Official USSR sources report only value. ³Million pieces.

Source: Vneshnyaya Torgovlya v SSSR, various issues; Ekonomicheskaya Gazeta, March 1981, No. 3.

Table 15—USSR agricultural exports 1974-1980, by value

Commodity	1974	1975	1976	1977	1978	1979	1980
<i>Million dollars¹</i>							
Meat and meat products	54.6	50.9	49.5	38.5	51.4	43.8	49.5
Milk and milk products	31.2	34.6	36.0	36.4	40.2	47.5	48.1
Grains	822.1	508.0	212.9	508.0	205.1	555.5	310.0
Flour and pulse products	235.1	173.9	186.1	172.3	185.7	233.0	227.8
Vegetables, fruits and nuts	30.2	31.6	24.9	29.5	28.5	31.7	47.2
Sugar and confectionary	51.6	36.8	35.5	33.0	58.8	72.2	76.3
Alcoholic and non- alcoholic drinks	45.1	51.2	54.0	57.5	72.4	84.6	93.4
Tobacco products	4.1	6.3	4.9	6.2	7.3	5.0	5.8
Furs	77.4	72.8	108.7	115.4	134.9	162.5	159.9
Raw hides	11.9	13.1	12.6	7.1	7.2	12.5	16.3
Oilseed, tobacco and other raw materials	75.5	78.1	54.5	67.3	62.3	65.3	71.5
Natural fibers	873.6	936.3	1,033.2	1,375.9	1,247.8	1,239.4	1,383.7
Wool	16.4	16.3	8.2	12.5	11.8	8.8	10.4
Animal fats including butter	60.3	73.1	57.5	74.8	83.5	84.4	80.9
Vegetable oils	346.0	310.7	172.0	141.0	98.8	90.6	87.0
Technical fats and oils	6.6	7.2	5.3	2.7	3.6	4.4	4.7
Seeds and planting materials	25.9	25.6	22.3	40.5	34.9	45.4	39.4
Total agricultural exports	2,767.6	2,426.5	2,078.1	2,718.6	2,334.2	2,786.6	2,711.9

¹USSR official data converted at \$1.32 in 1974; \$1.34 in 1975; \$1.33 in 1976; \$1.34 in 1977; \$1.46 in 1978; \$1.52 in 1979; \$1.54 in 1980.

Source: Vneshnyaya Torgovlya v SSSR, 1975-80.

Table 16—Principal agricultural exports, USSR, 1974-80

Commodity	1974	1975	1976	1977	1978	1979	1980
<i>1,000 metric tons</i>							
Total grain	7,030	3,578	1,468	¹ 3,763	¹ 1,374	¹ 3,275	¹ 1,490
Wheat	5,262	2,665	808	¹ 2,062	¹ 1,150	¹ 3,071	¹ 1,334
Barley	924	818	503	¹ 1,506	¹ 150	¹ 126	¹ 146
Corn	782	86	149	¹ 177	¹ 158	¹ 163	¹ 102
Rye	—	—	—	—	—	—	—
Oats	61	9	9	¹ 18	¹ 16	¹ 15	¹ 18
Flour	892	569	632	651	769	762	601
Groats	244	124	157	109	123	222	118
Pulses	58	50	37	43	52	54	32
Sugar, refined	95	53	73	81	162	226	152
Meat and meat products	56	44	41	33	39	34	35
Butter	18	20	16	18	18	18	18
Hides and skins ²	53	350	346	319	326	574	2,190
Oilseed cake and meal	NA	NA	NA	NA	NA	NA	NA
Sunflowerseed	63	61	—	—	—	—	—
Vegetable oil	—	—	—	—	—	—	—
Total edible	512	416	295	231	149	113	124
Sunflower	481	388	293	231	148	113	123
Tea	14	17	14	21	17	17	19
Cotton, lint	739	800	878	972	858	789	843
Flax tow	33	20	15	17	16	15	14
Starch	16	10	17	17	16	17	17

NA = Not available.

— = Negligible or none.

¹ERS estimates, official USSR sources report only value. ¹Thousands.

Source: Vneshnyaya Torgovlya v SSSR, various issues.

Table 17—U.S. agricultural trade with the USSR, 1971-81

Commodity	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981 ¹
<i>Million dollars</i>											
Exports ²											
Wheat	.7	160.0	556.6	124.1	672.7	264.2	426.8	355.8	813.2	336.1	782.3
Coarse grains ³	26.3	232.7	359.9	176.1	457.8	1,180.2	412.4	1,109.4	1,572.0	684.7	827.1
Corn	24.5	186.5	294.5	159.5	452.6	1,170.1	412.4	1,109.4	1,540.9	684.7	827.1
Rice	—	—	—	—	9.2	15.3	25.2	6.0	9.1	—	—
Soybeans	—	53.6	87.2	—	2.9	126.4	154.4	222.1	494.1	45.3	8.6
Oilcake & meal	—	—	—	.5	—	—	1.5	.2	6.7	—	—
Soybean oil	—	—	—	—	—	—	—	—	15.8	—	—
Cattle hides	10.9	9.6	1.1	7.9	5.2	2.5	.8	8.1	3.2	.1	0
Fruits, nuts and berries	1.5	1.1	2.8	5.3	6.1	8.4	20.4	16.8	15.6	18.5	16.2
Tallow (inedible)	—	—	—	—	14.0	—	—	18.7	57.6	28.2	48.5
All other	5.2	2.4	9.5	9.8	2.4	7.8	⁴ 11.3	⁵ 28.0	12.8	16.8	⁶ 37.6
Total	44.6	459.4	1,017.1	323.7	1,170.3	1,604.8	1,052.8	1,765.1	3,000.1	1,129.7	1,720.3
Imports											
Animal and animal products	2.8	3.4	4.0	7.1	5.4	7.2	10.2	11.6	12.9	7.5	8.9
Casein & mixture	—	—	.2	2.0	1.7	.7	1.7	2.4	3.0	1.0	.3
Furskins	2.7	3.0	3.1	4.5	3.5	6.1	8.0	8.9	9.6	6.1	8.6
Bristles	(⁷)	.2	.5	.4	(⁷)	—	—	—	—	—	—
Gelatin	—	(⁷)	.3	.3	(⁷)	.1	(⁷)	—	—	—	—
Licorice root	.1	.2	.2	.2	1.1	.6	—	—	—	—	—
Tobacco fillers	—	—	—	—	—	—	—	.6	1.2	1.5	.9
All other	.1	.2	.2	.9	.7	.5	.7	.2	.6	.6	2.1
Total	3.0	3.8	4.7	8.5	7.2	8.4	10.9	12.4	14.7	9.6	11.9

— = Negligible or none.

¹Preliminary. ²Including transshipments through Canada, Belgium, the Netherlands, and West Germany. ³Includes corn, rye, barley, oats, and sorghum. ⁴Includes \$4.5 million of peanuts. ⁵Includes \$16.6 million of peanuts. ⁶Includes \$15.6 million of sugar. ⁷Less than \$50,000.

Table 18—Inventories, deliveries, and scrapping rates of tractors, grain combines, and trucks, USSR, 5-year average, and 1971-81 annual¹

Year	Tractors			Grain combines			Trucks		
	Inven- tories	Deliv- eries	Scrapping rate ²	Inven- tories	Deliv- eries	Scrapping rate ²	Inven- tories	Deliv- eries	Scrapping rate ²
	Thousands	Percent		Thousands	Percent		Thousands	Percent	
1966-70 Average	1,748	293	12.6	558	94	13.8	³ 1,061	144	—
1971	1,977	313	12.3	623	99	13.3	1,136	169	12.1
1972	2,046	313	11.6	639	93	11.9	1,168	188	10.6
1973	2,122	323	12.1	656	82	12.2	1,232	225	14.7
1974	2,188	348	12.3	658	83	10.3	1,276	251	15.0
1975	2,267	370	13.4	673	92	12.6	1,336	269	15.6
1976	2,334	369	13.0	680	98	13.7	1,396	269	16.0
1977	2,400	365	12.8	685	101	13.6	1,442	268	14.5
1978	2,458	371	12.8	693	111	15.0	1,501	270	16.2
1979	2,515	355	13.1	700	112	15.1	1,528	267	14.9
1980	2,540	348	12.8	706	117	14.4	1,568	268	15.3
1981	2,562	352	⁴ 13.0	722	105	⁴ 13.8	1,596	268	⁴ 15.0

NA = Not available.

¹Inventories are for the beginning of the year. ²Equal to deliveries minus change in inventories divided by inventories at the beginning of the year.

³Including tank trucks. ⁴Estimated.

Table 19—Production of mineral fertilizers by type, USSR, 5-year average, and 1971-81 annual

Year	Total	Nitrogen	Phosphate	Ground phosphate rock	Potash	Trace elements
1,000 metric tons						
Standard gross weight						
1966-70 average	44,127	20,527	10,855	5,029	7,638	78
1971	61,398	29,530	14,826	5,420	11,556	66
1972	66,066	31,945	15,663	5,319	13,061	78
1973	72,332	35,310	17,305	5,395	14,224	98
1974	80,357	38,308	20,683	5,442	15,832	92
1975	90,202	41,628	23,816	5,573	19,097	88
Average	74,071	35,344	18,459	5,430	14,754	84
1976	92,244	41,970	25,844	4,372	19,977	81
1977	96,752	44,450	27,822	4,320	20,063	97
1978	97,976	45,356	28,596	4,240	19,694	90
1979	94,523	44,634	29,399	4,460	15,949	81
1980	103,858	49,944	30,066	4,384	19,385	79
Average	97,071	45,271	28,345	4,355	19,014	86
1981 ¹	108,000	NA	NA	NA	NA	NA
Nutrient weight ²						
1966-70 average	10,379	4,210	2,030	955	3,177	7
1971	14,670	6,055	2,772	1,030	4,807	6
1972	15,931	6,551	2,929	1,011	5,433	7
1973	17,429	7,241	3,236	1,026	5,918	9
1974	19,352	7,856	3,868	1,034	6,586	8
1975	21,998	8,535	4,452	1,059	7,944	8
Average	17,876	7,248	3,451	1,032	6,138	8
1976	22,590	8,609	4,833	831	8,310	7
1977	23,493	9,114	5,203	821	8,347	8
1978	23,653	9,299	5,347	806	8,193	8
1979	22,137	9,151	5,497	847	6,635	7
1980	24,767	10,241	5,622	833	8,064	7
Average	23,328	9,283	5,300	828	7,910	7
1981 ³	26,000	NA	NA	NA	NA	NA

NA = Not available.

¹Estimate. ²Nitrogen—20.5 percent N, phosphates—18.7 percent P₂O₅, ground rock phosphates—19 percent P₂O₅, potash—41.6 percent K₂O.

³Preliminary.

**Table 20—Deliveries of mineral fertilizers to agriculture by type, USSR,
5-year averages, and 1971-81 annual**

Year	Nitrogen	Phosphate	Ground Phosphate rock	Potash	Trace elements	Total excluding feed additives	Feed additives		Total including feed additives
							Urea	Feed phosphates	
1,000 metric tons									
Standard gross weight:									
1966-70 average	17,171	19,878	4,508	5,340	79	NA	—	NA	36,977
1971	25,279	13,057	4,916	6,703	65	50,020	—	527	50,547
1972	27,346	13,968	4,756	7,784	78	53,932	90	773	54,795
1973	30,361	14,606	4,740	8,667	98	58,472	159	1,358	59,988
1974	32,665	17,520	4,650	8,914	92	63,841	243	1,800	65,884
1975	35,798	20,478	4,731	12,444	86	73,537	334	1,847	75,718
Average	30,290	15,926	4,759	8,902	84	59,960	165	1,261	61,386
1976	35,376	21,751	4,395	13,407	81	75,010	382	2,340	77,732
1977	36,694	22,918	4,307	12,981	84	76,984	435	2,341	79,760
1978	37,358	24,334	4,258	12,967	85	79,002	385	1,832	81,219
1979	36,423	24,799	4,435	10,604	77	76,338	374	2,216	78,928
1980	40,301	25,456	4,369	11,788	79	81,993	421	2,310	84,724
Average	37,230	23,852	4,353	12,349	81	77,865	401	2,208	80,473
1981	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nutrient weight: ²									
1966-70 average	3,520	¹ 1,847	857	2,221	7	NA	—	NA	8,453
1971	5,182	2,442	934	2,788	6	11,352	—	99	11,451
1972	5,606	2,612	904	3,238	7	12,367	18	145	12,530
1973	6,224	2,731	901	3,605	9	13,470	32	254	13,756
1974	6,696	3,276	884	3,708	8	14,572	50	336	14,958
1975	7,339	3,829	899	5,176	8	17,251	68	346	17,665
Average	6,209	2,978	904	3,703	8	13,802	34	236	14,072
1976	7,252	4,068	835	5,577	7	17,739	78	438	18,255
1977	7,522	4,286	818	5,400	8	18,034	89	438	18,561
1978	7,658	4,551	809	5,394	8	18,420	79	342	18,841
1979	7,467	4,637	843	4,411	7	17,365	77	414	17,856
1980	8,262	4,760	830	4,904	7	18,763	86	432	19,281
Average	7,652	4,460	827	5,137	7	18,064	82	413	18,559
1981 ³	NA	NA	NA	NA	NA	19,169	NA	⁴ 617	19,786

— = Negligible or none.

NA = Not available.

¹Includes feed additives. ²Nitrogen—20.5 percent N, phosphates—18.7 percent P₂O₅, ground rock phosphates—19 percent P₂O₅, potash—41.6 percent, K₂O. ³Preliminary. ⁴Total for feed additives.

CONVERSION EQUIVALENTS

One kilogram	equals	2.2046 pounds
One centner or metric quintal	"	220.46 pounds
One metric ton	"	2204.6 pounds
One hectare	"	2.471 acres

Metric tons to bushels

One metric ton	Bushels
Wheat, potatoes, and soybeans	36.743
Rye, corn, and grain sorghum	39.368
Barley	45.929
Oats	68.894

To convert centners per hectare to bushels per acre,
multiply by:

Wheat, potatoes and soybeans	1.487
Rye, corn, and grain sorghum	1.593
Barley	1.859
Oats	2.788

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